TRANE

# Catalog

## Performance Climate Changer Air Handler
## Model UCCA
Sizes 3-30

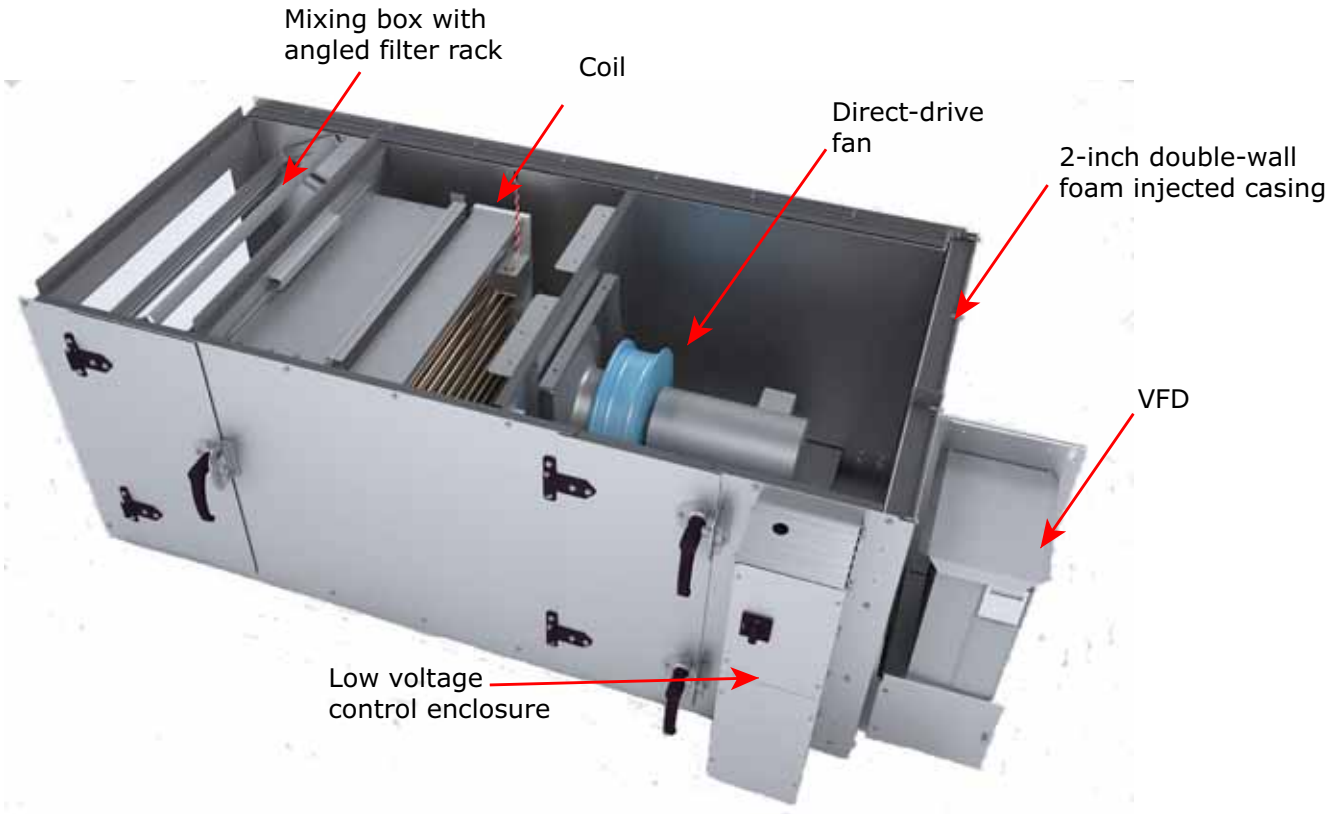
December 2013 CLCH-PRC024A-EN

Ingersoll Rand

# Trane Performance Climate Changer™ Air Handlers

Trane has a Performance Climate Changer air handler adaptable to almost every environment. The Performance model UCCA is designed for budget-conscience applications, but does not sacrifice on construction, quality, or performance.

- 2-inch R13 foam insulated panels and doors
- Less than 0.005 inches at +/-4 inches w.g. panel and door deflection
- All airfoil bladed dampers meet ASHRAE 90.1 lowest specified leakage
- Quick-connect wiring minimizes installation costs and provides wiring integrity between sections
- Factory engineered and mounted control packages
- Hinged and handled access doors
- UL/CUL listed
- AHRI Standard 430-certified air-handling unit
- AHRI Standard 410-certified coils
- 2-inch/4-inch combination filter, or 2-inch/4-inch combination filter in a mixing box
- Fan options including forward curved (FC) and direct-drive plenum (DDP) fans
- Electric heat including full modulating control
- Units ship on skid for forklift transportation at job site
- Building Information Modeling (BIM) drawing to minimize jobsite ductwork, electrical, piping, and structural interference



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# Model Number Descriptions

### Digit 1, 2, 3, 4— Unit Model

UCCA = Performance Climate Changer Air Handler

### Digit 5 - Configuration

A = Horizontal/front top with housed fan
B = Horizontal/top front with housed fan
C = Vertical/front top with housed fan
D = Vertical/top front with housed fan
E = Vertical/back top with housed fan
F = Vertical/top back with housed fan
G = Horizontal/front top with DDP fan
H = Horizontal/top front with DDP fan
S = Special

### Digit 6, 7 - Unit size

3 = Unit size 3
6 = Unit size 6
8 = Unit size 8
10 = Unit size 10
12 = Unit size 12
14 = Unit size 14
17 = Unit size 17
21 = Unit size 21
25 = Unit size 25
30 = Unit size 30

### Digit 8 - Unit voltage

0 = No motor, controls, or electric heat
A = 208 volt/60 hertz/3 phase odp
B = 230 volt/60 hertz/3 phase odp
C = 460 volt/60 hertz/3 phase odp
D = 575 volt/60 hertz/3 phase odp
S = Special

### Digit 9 - Open

0 = Open for future use

### Digit 10, 11 - Design sequence

A0 = A0

### Digit 12 - Connections

R = Polymer drain pan, RH coil/RH motor
L = Polymer drain pan, LH coil/LH motor
C = Polymer drain pan, RH coil/LH motor
D = Polymer drain pan, LH coil/RH motor
E = Stainless steel drain pan, RH coil/ RH motor
F = Stainless steel drain pan, LH coil/ LH motor
G = Stainless steel drain pan, RH coil/ LH motor
H = Stainless steel drain pan, LH coil/ RH motor
S = Special

### Digit 13 - Coil #1 first in airstream

0 = No unit coil #1
A = 1 row preheat hydronic/9 fins per in.
B = 1 row preheat hydronic/12 fins per in.
C = 1 row preheat hydronic/14 fins per in.
D = 2 row preheat hydronic/9 fins per in.
E = 2 row preheat hydronic/12 fins per in.
F = 2 row preheat hydronic/14 fins per in.
G = 1 row preheat steam/6 fins per in.
H = 4 row hydronic/9 fins per in.
J = 4 row hydronic/12 fins per in.
K = 4 row hydronic/14 fins per in.
L = 6 row hydronic/9 fins per in.
M = 6 row hydronic/12 fins per in.
N = 6 row hydronic/14 fins per in.
P = 8 row hydronic/9 fins per in.
R = 8 row hydronic/12 fins per in.
T = 8 row hydronic/14 fins per in.
U = 4 row DX/9 fins per in.
V = 4 row DX/12 fins per in.
W = 4 row DX/14 fins per in.
Y = 6 row DX/9 fins per in.
Z = 6 row DX/12 fins per in.
1 = 6 row DX/14 fins per in.
S = Special

### Digit 14 - Coil #2 second in airstream

0 = No unit coil #2
A = 1 row reheat hydronic/9 fins per in.
B = 1 row reheat hydronic/12 fins per in.
C = 1 row reheat hydronic/14 fins per in.
D = 2 row reheat hydronic/9 fins per in.
E = 2 row reheat hydronic/12 fins per in.
F = 2 row reheat hydronic/14 fins per in.
G = 1 row reheat steam/6 fins per in.
H = 4 row hydronic/9 fins per in.
J = 4 row hydronic/12 fins per in.
K = 4 row hydronic/14 fins per in.
L = 6 row hydronic/9 fins per in.
M = 6 row hydronic/12 fins per in.
N = 6 row hydronic/14 fins per in.
P = 8 row hydronic/9 fins per in.
R = 8 row hydronic/12 fins per in.
T = 8 row hydronic/14 fins per in.
U = 4 row DX/9 fins per in.
V = 4 row DX/12 fins per in.
W = 4 row DX/14 fins per in.
Y = 6 row DX/9 fins per in.
Z = 6 row DX/12 fins per in.
1 = 6 row DX/14 fins per in.
S = Special

### Digit 15 - Coil options

0 = None
1 = Aluminum fin, galvanized coil casing
2 = Aluminum fin, stainless steel coil casing
S = Special

### Digit 16 - Controller options

0 = None
1 = Unwired end devices
2 = Control interface
S = Special

### Digit 17 - Electric heat/factory mounted

0 = No electric heat
1 = Electric heat with 1 stage
2 = Electric heat with 2 stages
4 = Electric heat with 4 stages
5 = SSR control
S = Special

### Digit 18, 19, 20 - Electric heater kW

000 = None
006 = 6.0 kW
007 = 7.0 kW
008 = 8.0 kW
009 = 9.0 kW
010 = 10.0 kW
011 = 11.0 kW
012 = 12.0 kW
013 = 13.0 kW
014 = 14.0 kW
015 = 15.0 kW
016 = 16.0 kW
017 = 17.0 kW
018 = 18.0 kW
020 = 20.0 kW
022 = 22.0 kW
024 = 24.0 kW
026 = 26.0 kW
027 = 28.0 kW
030 = 30.0 kW
032 = 32.0 kW
034 = 34.0 kW
036 = 36.0 kW
038 = 38.0 kW
041 = 41.0 kW
044 = 44.0 kW
047 = 47.0 kW
050 = 50.0 kW
053 = 53.0 kW
056 = 56.0 kW
059 = 59.0 kW
063 = 63.0 kW
067 = 67.0 kW
071 = 71.0 kW
075 = 75.0 kW
079 = 79.0 kW
083 = 83.0 kW
087 = 87.0 kW
091 = 91.0 kW
095 = 95.0 kW
100 = 100 kW
105 = 105 kW
110 = 110 kW
115 = 115 kW
120 = 120 kW
SSS = Special

### Digit 21 - Electric heat options

0 = None
A = Line fuse, door interlocking disconnect switch and airflow switch
S = Special

### Digit 22 - Refrigerant circuit options

0 = None
1 = Single refrigerant circuit arr with 1 stage DX 1/4-in. distributor
2 = Face split refrigerant circuit arr with 2 stage DX 1/4-in. distributor
3 = Intertwined refrigerant circuit arr with 2 stage DX 1/4-in. distributor
4 = Single refrigerant circuit arr with 2 stage DX 1/4-in. distributor
5 = Face split refrigerant circuit arr with 4 stage DX 1/4-in. distributor
6 = Intertwined refrigerant circuit arr with 4 stage DX 1/4-in. distributor
A = Single refrigerant circuit arr with 1 stage DX 3/16-in. distributor
B = Face split refrigerant circuit arr with 2 stage DX 3/16-in. distributor
C = Intertwined refrigerant circuit arr with 2 stage DX 3/16-in. distributor
D = Single refrigerant circuit arr with 2 stage DX 3/16-in. distributor
E = Face split refrigerant circuit arr with 4 stage DX 3/16-in. distributor
F = Intertwined refrigerant circuit arr with 4 stage DX 3/16-in. distributor
S = Special

### Digit 23 - Motor horsepower

0 = No motor
A = 1 hp (0.746 kW)
B = 1 1/2 hp (1.119 kW)
C = 2 hp (1.492 kW)
D = 3 hp (2.238 kW)
E = 5 hp (3.730 kW)
F = 7 1/2 hp (5.595 kW)
G = 10 hp (7.460 kW)
H = 15 hp (11.190 kW)
S = Special

### Digit 24 - Volume control

0 = None
A = FC fan constant volume with variable pitch sheaves
B = FC fan constant volume with fixed pitch sheaves or DDP fan
C = FC fan with fixed pitch sheaves or DDP fan and variable frequency drive
D = FC fan with fixed pitch sheaves or DDP fan and variable frequency drive and shaft grounding
E = FC fan constant volume with fixed pitch sheaves or DDP and shaft grounding
S = Special

### Digit 25 - Drives

0 = None
A = 650 rpm fixed/600-700 rpm variable
B = 700 rpm fixed/650-750 rpm variable
C = 750 rpm fixed/700-800 rpm variable
D = 800 rpm fixed/750-850 rpm variable
E = 850 rpm fixed/800-900 rpm variable
F = 900 rpm fixed/850-950 rpm variable
G = 950 rpm fixed/900-1000 rpm variable
H = 1000 rpm fixed/950-1050 rpm variable
J = 1050 rpm fixed/1000-1100 rpm variable
K = 1100 rpm fixed/1050-1150 rpm variable
L = 1150 rpm fixed/1100-1200 rpm variable
M = 1200 rpm fixed/1150-1250 rpm variable
N = 1250 rpm fixed/1200-1300 rpm variable
P = 1300 rpm fixed/1250-1350 rpm variable
R = 1350 rpm fixed/1300-1400 rpm variable
T = 1400 rpm fixed/1350-1450 rpm variable
U = 1450 rpm fixed/1400-1500 rpm variable
V = 1500 rpm fixed/1450-1550 rpm variable
W = 1550 rpm fixed/1500-1600 rpm variable
Y = 1600 rpm fixed/1550-1650 rpm variable
Z = 1650 rpm fixed/1600-1700 rpm variable
1 = 1700 rpm fixed/1650-1750 rpm variable
2 = 1750 rpm fixed/1700-1800 rpm variable
3 = 1800 rpm fixed/1750-1850 rpm variable
4 = 1850 rpm fixed/1800-1900 rpm variable
5 = 1900 rpm fixed/1850-1950 rpm variable
6 = 1950 rpm fixed/1900-2000 rpm variable
7 = 2000 rpm fixed/1950-2050 rpm variable
8 = Direct-drive plenum fan
S = Special

### Digit 26, 27 - VFD setting/DDP fan speed

00 = Housed fan
54 = 54 hertz/1604 rpm
55 = 55 hertz/1634 rpm
56 = 56 hertz/1663 rpm
57 = 57 hertz/1693 rpm
58 = 58 hertz/1723 rpm
59 = 59 hertz/1752 rpm
60 = 60 hertz/1782 rpm
61 = 61 hertz/1872 rpm
62 = 62 hertz/1841 rpm
62 = 63 hertz/1871 rpm
64 = 64 hertz/1901 rpm
65 = 65 hertz/1931 rpm
66 = 66 hertz/1960 rpm
67 = 67 hertz/1990 rpm
68 = 68 hertz/2020 rpm
69 = 69 hertz/2049 rpm
70 = 70 hertz/2079 rpm
71 = 71 hertz/2109 rpm
72 = 72 hertz/2138 rpm
73 = 73 hertz/2168 rpm
74 = 74 hertz/2198 rpm
75 = 75 hertz/2228 rpm
76 = 76 hertz/2257 rpm
77 = 77 hertz/2287 rpm
78 = 78 hertz/2317 rpm
79 = 79 hertz/2346 rpm
80 = 80 hertz/2376 rpm
81 = 81 hertz/2406 rpm
82 = 82 hertz/2435 rpm
83 = 83 hertz/2465 rpm
84 = 84 hertz/2495 rpm
85 = 85 hertz/2525 rpm
86 = 86 hertz/2554 rpm
87 = 87 hertz/2584 rpm
88 = 88 hertz/2614 rpm
89 = 89 hertz/2643 rpm
90 = 90 hertz/2673 rpm
91 = 91 hertz/2703 rpm
92 = 92 hertz/2732 rpm
93 = 93 hertz/2762 rpm
94 = 94 hertz/2792 rpm
95 = 95 hertz/2822 rpm
96 = 96 hertz/2851 rpm
97 = 97 hertz/2881 rpm
98 = 98 hertz/2911 rpm
99= 99 hertz/2941 rpm
A0 = 100 hertz/2970 rpm
A1 = 101 hertz/3000 rpm
A2 = 102 hertz/3030 rpm
A3 = 103 hertz/3060 rpm
A4 = 104 hertz/3089 rpm
A5 = 105 hertz/3119 rpm
A6 = 106 hertz/3149 rpm
A7 = 107 hertz/3178 rpm
A8 = 108 hertz/3208 rpm
A9 = 109 hertz/3238 rpm
B0 = 110 hertz/3267 rpm
B1 = 111 hertz/3297 rpm
B2 = 112 hertz/3327 rpm
B3 = 113 hertz/3357 rpm
B4 = 114 hertz/3386 rpm
B5 = 115 hertz/3416 rpm
B6 = 116 hertz/3446 rpm
B7 = 117 hertz/3475 rpm
B8 = 118 hertz/3505 rpm
B9 = 119 hertz/3535 rpm
C0 = 120 hertz/3564 rpm
SS - Special

### Digit 28 - Mixing Box/Filter section

0 = None
A = 2-in. flat filter rack
B = 2-in. flat filter/mixing box
C = 2-in. angle filter section
D = 2-in. angle filter/mixing box
E = 2-in./4-in. combination filter rack
F = 2-in./4-in. combination filter/ mixing box
S = Special

## Model Number Descriptions

### Digit 29 - Filter type

0 = Customer supplied/no filters
A = 2-in. MERV 8
B = 2-in. MERV 13
C = 2-in. MERV 8/4-in. MERV 11
D = 2-in. MERV 8/4-in. MERV 13
E = 2-in. MERV 13/4-in. MERV 13
S = Special

### Digit 30 - Controls options 1

0 = None
1 = Low limit switch, condensate overflow switch, dirty filter switch and fan status switch
S = Special

### Digit 31 - Controls options 2

0 = None
A = Discharge air sensor
B = Discharge air sensor and mixed air sensor
C = Discharge air sensor, mixed air sensor, factory-mounted n.o. mixing box actuator
D = Discharge air sensor, mixed air sensor, factory-mounted n.c. mixing box actuator
S = Special

### Digit 32 - Controls options 3

0 = None
A = Outdoor air temperature sensor hard wired
B = Duct static pressure sensor hard wired
C = Outdoor air temperature sensor and duct static pressure sensor hard wired
S = Special

### Digit 33 - Special

0 = Standard order
S = Special order

# Features and Benefits

The Performance Climate Changer air handler, model UCCA, provides a cost-effective solution to meet cataloged air handling needs. As a customizable, cataloged air handler, components are available to meet a wide range of commercial and institutional applications for the indoor air handler market. Pre-engineered options expand that flexibility while ensuring proven, tested performance and dependability. These features add flexibility and are engineered to provide good indoor air quality, including:

- Single point power
- Factory mounted, wired and tested controls
- Two-inch double-wall injected foam casing
- Direct-drive plenum fans
- Filter options including MERV 11 and MERV 13 filters, which help achieve points toward LEED certification
- Variety of coil options that include hydronic, DX, steam and electric heat

## Construction and Integrity

Panels and doors are designed to provide extraordinary insulating capabilities for efficient and cost-effective performance. Standard double-wall panels and doors include two-inch closed cell foam insulation providing a minimum R-value of 13, in addition to premium panel strength and 0.005 inch deflection at +/- 4 inches w.g.

Heavy-duty door handles and hinges are surface-mounted and a removable hinge pin allows for easy door removal.

## Engineered for Good IAQ

The building industry is continuously evolving and the rate of change is accelerating. The Performance air handler is engineered to address today's multifaceted design issues required to provide good indoor air quality (IAQ). Building owners must give particular attention to maintaining and documenting IAQ to ensure occupant comfort and to meet industry and government regulatory standards.

ASHRAE Standard 62.1 provides guidance regarding suitable outside air volume to be brought into the building, recommended air filtration, and procedures to control microbial growth. The Performance air handler enables you to configure an IAQ-ready air-handling system that addresses these concerns.

### Sloped Drain Pan

The drain pan is positively sloped in every plane to assure proper drainage and help maximize protection from microbial growth.

Drain pans are made from a noncorrosive polymer material, double-wall construction, and foamed in place to help eliminate condensation beneath the drain pan. An optional stainless steel drain pan is also available.

## Serviceability/Cleanability

- Full-size access doors are provided for cleaning of internal components
- Removable coil panels
- Smooth, cleanable interior double-wall surfaces help improve indoor air quality
- Coils are raised up out of the drain pan to make all coils removable from the side and provide easier access to the drain pan for cleaning

## Filtration

Performance air handlers are available with a wide variety of filtration options, including:

- Two-inch MERV 8 or MERV 13 flat or angled filters
- Combination filter racks including two-inch MERV 8 or MERV 13 and four-inch MERV 11 or MERV 13

A factory-mounted dirty filter switch can be used to indicate when the filter needs replacement.

## Ventilation

An optional mixing box with ultra low-leak dampers is available for use when ventilation air is delivered directly to the unit. This mixing box can also function as a zero to 100 percent economizer to improve energy efficiency.

## Dehumidification

Performance air handler model UCCA can be configured for either a constant-volume or VAV application. VAV systems generally provide effective, coincidental dehumidification over a wide range of indoor load conditions. As long as any space needs cooling, the VAV air handler supplies dry (low dew point) air to all of the VAV terminal units.

For direct control of space humidity in a constant-volume application, the Performance air handler can be configured with a hydronic or steam heating coil in the reheat position. This would allow the cooling and heating coils to modulate independently to directly control both temperature and humidity in the space. A unit-mounted electric heater, with a single-point connection, is also available in the reheat position.

# Control Solutions

Performance air handlers are available with an optional control interface. This package can be used as part of a stand-alone operation, or it can be fully integrated into a comprehensive control system. The Trane Earthwise™ system incorporates the benefits of factory-installed controls and links the air handler to the Tracer™ SC system controls building management system. This option is designed to lower installation costs and risk while dramatically improving the quality of the application and the performance of the air handler. The entire air handler control system is engineered, mounted, wired, and tested before leaving the factory. As a result of strict quality manufacturing methods, these control options bring consistency and reliability to the control-system package and provide single-source responsibility.

The following control devices are available as standard mounted on fan sections:

- Variable-frequency drives (VFDs)
- Control interface package
  - Fan motor disconnect switch
  - Fused transformer(s)
  - Fan contactor
  - Customer terminal strip for field-provided controls
- Various end device options, including:
  - Low limit protection
  - Condensate overflow switch
  - Fan status switch
  - Filter status switch
  - Discharge air sensor
  - Mixed air sensor
  - Damper actuator

## Single Source Responsibility

Equipment and interoperable controls, engineered and provided by a single manufacturer, provide faster construction cycles and simplify job-site coordination efforts. This simplification reduces installation time, expense, and risk.Trane equipment and controls package provides the optimal performance when integrated in a Trane Earthwise™ system. This is a powerful system architecture that unifies Trane HVAC equipment, direct digital control, and building management into a cohesive whole with an assured source of support. This system is managed with the Tracer™ building management system.

# Proven Performance

## AHRI Standards

**Figure 1. AHRI Standard 430**

Trane combines comprehensive performance certification by AHRI with thorough laboratory testing and advanced manufacturing methods. Together, these elements help assure that each Trane air handler operates predictably and reliably throughout the life of the unit.

Unlike other rating methods that check fan performance alone, Trane units are performance-tested in accordance with AHRI Standard 430. This certification process evaluates the air handler on the basis of airflow, static pressure, fan speed, and brake horsepower.

**Figure 2. AHRI Standard 410**

Heating and cooling coils are rigorously tested and certified with AHRI Standard 410 to assure that they, too, deliver published performance.

AHRI Standard 260 is the first ducted-air-handler sound rating procedure. It is intended to provide engineers with better, more accurate, ducted sound power levels so that they can design quieter and more cost-effective comfort systems. Sound ratings for Trane air handlers have been developed from extensive AHRI Standard 260 testing and laboratory data.

## UL Listing

Trane air handlers are UL-listed to U.S. and Canadian safety standards.

## ISO Certification

Certification by the International Standardization Organization (ISO) ensures that an organization can consistently deliver a product or service that meets the customer's contractual requirements by following documented processes. The ISO 9001 quality assurance model establishes the requirements for an organization whose business processes range from design and development to production. Having the quality management system of our manufacturing plants ISO 9001-certified directly benefits Trane customers because our continuous process improvements can reduce business costs, improve product quality, and enable faster ship cycles

# Application Considerations

The Performance Climate Changer air handler, model UCCA, offers a wide range of application flexibility while maintaining a simple, easy to install unit design. These units are a great choice when a compact, reliable air handler is needed when budget is a critical factor.

Typical applications include many different types of buildings such as: schools, office buildings, hospitals and retail. Applications can be either constant volume or variable air volume. Some applications include:

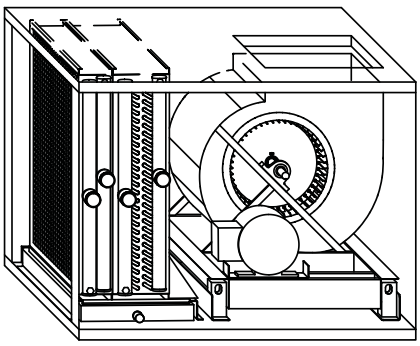
- Two-pipe hydronic system for cooling and/or heating
- Two-pipe hydronic cooling system with electric heat
- Four-pipe system with dedicated heating and cooling coils
- Direct expansion (DX) split systems with hydronic heat

## Standard AHU Arrangements

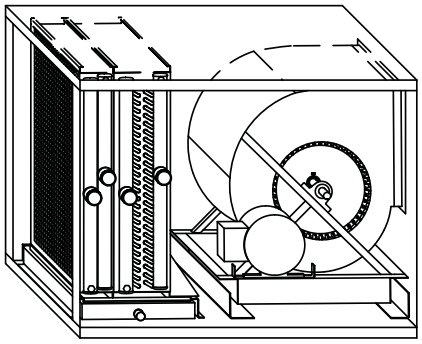
To complete the air-handling system, the unit must be arranged in a way that fits the available space and meets the application requirement. The Performance air handler provides a draw-thru AHU arrangement that places the coils and filters upstream of a ducted supply fan.

### Horizontal Draw-Thru

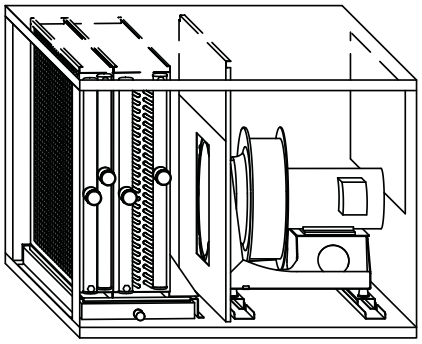
**Figure 3. Horizontal draw-thru units**



FC fan with top front discharge



FC fan with front top discharge

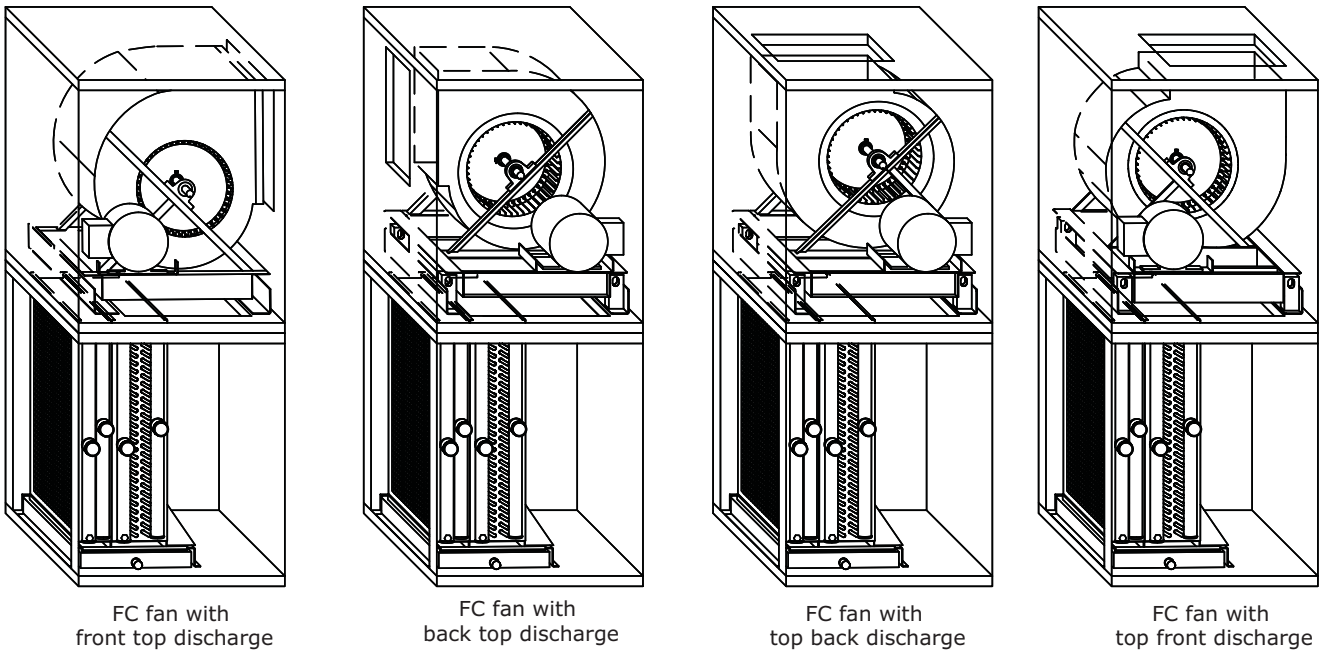


Direct-drive fan with front discharge

Trane air handlers in a horizontal draw-thru arrangement provide the system components that are required in a single-level unit. An optional blow-thru electric heater is also available. Accepted system design practices are generally the only restrictions in a horizontal draw-thru application.

## Vertical Draw-Thru

**Figure 4. Vertical draw-thru units**




Trane air handlers in a vertical draw-thru arrangement result in a shorter footprint than horizontal draw-thru units. This arrangement stacks a fan on top of the coil section. When designing an air handler in this configuration, a vertical draw-thru fan performance curve should be used to account for the airflow impingement by a coil as the air flows through the coil and turns up into the fan.

## Installation

Horizontal units can be floor-mounted on a house-keeping pad or suspended from the ceiling. Vertical units are floor-mounted on a house-keeping pad. Refer to CLCH-SVX009A-EN Installation, Operation, Maintenance (IOM) manual for installation instructions.

All units are shipped with isolation system tied down for shipment purposes. To utilize standard internal isolation, remove shipping tie-downs per the IOM. If external isolation is being utilized, install units with external vibration isolation on all connection points, including the ductwork connections and piping connections.

It is important to consider proper condensate management before installation. You must mount the unit high enough so that the condensate drain pan can be properly trapped. Refer to CLCH-SVX009A-EN IOM for specific trapping instructions.

Install units in accordance to all applicable ASHRAE standards, SMACNA, and local code requirements.

# Operating Limitations

Do not operate unit above maximum fan speed or unit airflow as shown in the unit fan curves. Unit operation at greater than maximum fan speed can drastically reduce bearing life and result in a catastrophic failure. Operating at greater than the maximum allowable airflow in the cooling mode may result in unsatisfactory operation due to moisture carryover from the coil. In addition, it is often not economical to operate a unit at its maximum fan speed due to the greater motor power requirements.

Do not operate units with electric heat below the minimum airflow listed in CLCH-SVX009A-EN IOM. This is to prevent excessive leaving air temperatures and electric heat limit trips.

Do not operate a hydronic (or steam) coil and electric heat simultaneously. This is to prevent excessive leaving air temperatures and limit trips. Electric heat units are equipped with a lockout switch to disable the electric heater if the temperature of the hydronic (or steam) coil is greater than 95°F (35C).

Do no operate coils above the fluid flow limits listed in the installation manual. This is to prevent noise and erosion within the coil. A minimum or “self venting” fluid flow rate is also listed in the installation manual. If coils operate below this flow rate, you should periodically vent them by flushing at a higher flow rate. These low fluid flow rates may also be too low to be included in the AHRI certification.

# DX Cooling Units

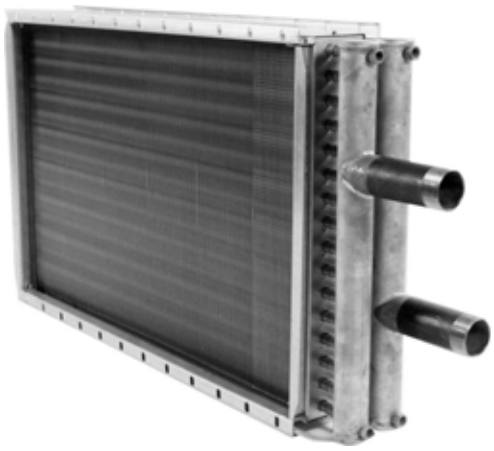
Performance air handlers with a DX cooling coil will often be connected to an air-cooled condensing unit. Some condensing units have two, independent refrigeration circuits, while the DX coil in size 3 through 10 units can be configured with a single circuit. Do not manifold two, independent refrigeration circuits into a single-circuited DX (evaporator) coil. If the condensing unit does have two, independent refrigeration circuits, configure the DX coil to have either two or four distributors.

DX coils, equipped with either two or four distributors, can be configured with either intertwined or horizontal split circuiting. Intertwined circuited is preferred in VAV applications. At low loads, refrigerant is fed to alternating tubes, and the coil performs as though its fin surface area is substantially greater. Therefore, the coil surface can be warmer at part load, which reduces the risk of frost and still provides a constant leaving-air temperature.

# Components and Options

Performance Climate Changer air handler model UCCA provides a standard configuration with coil(s) and fan, and then allows customization with various optional accessory sections.

**Figure 5. A variety of coils are available on Performance air handlers**



## Coils

The variety of Trane coil types, sizes, arrangements, and materials allows you to select a coil that is optimized for pressure drop and capacity requirements. Published coil performance is certified in accordance with AHRI Standard 410 and meets CRN standards.

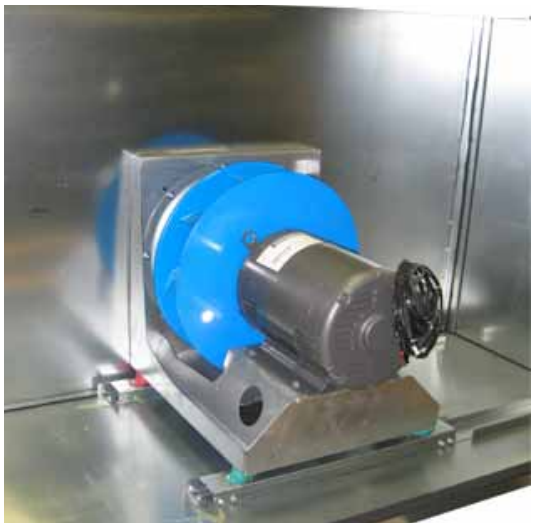
Trane is at the leading edge of coil technology. Through extensive laboratory testing and numerous job-site installations, Trane has developed an enhanced fin surface that has superior heat transfer characteristics and allows greater velocities of air to move through the cooling coil without causing moisture carryover.

The industry is familiar with the 500 fpm limit through a cooling coil as a "rule of thumb" to safeguard against moisture carryover. However, some applications have tight dimensional constraints that require high coil face velocities. Trane's fin design extends this limit in excess of 625 fpm, depending upon air conditions, coil size, and spacing. Tested data for moisture carryover is incorporated in the Trane Official Product Selection System (TOPSS™). In cases where moisture carryover is possible, the TOPSS program alerts you to this fact with a moisture carryover warning.

Coil options include the following:

- Four- to eight-row, ½-inch OD (outside diameter) chilled water coils
- Four-to six-row, ½-inch OD refrigerant coils
- One- or two-row ½-inch OD hot water coils
- One-row, 1-inch OD distributing-type steam coils

**Figure 6. Direct-drive plenum fans and FC fans are available**



## Fans

Trane offers flexible fan types and options, including variable-frequency drives (VFDs) for modulation in variable-air-volume systems. Fan types include:

- Single-width/single-inlet (SWSI) direct-drive plenum fans with front or top discharge
- Double-width/double-inlet (DWDI) centrifugal forward-curved (FC) fans with front or top discharge

Each fan is rated in accordance with Standard 430 of the Air Conditioning Heating and Refrigeration Institute (AHRI) and all DWDI fans are AHRI Standard 430-certified to assure published performance.

To verify that fan performance will satisfy design requirements, use the TOPSS selection program. The AHRI Standard 430-certified fan curves include the fan section casing effect. TOPSS also takes into account air density, fan and motor heat, drive losses, and use of high-performance filters that affect fan performance.

Figure 7. Mixing box with angled filter rack

## Mixing Box/Filter Section

A mixing box is available for those applications where both return air and fresh air are delivered directly to the unit or as part of an economizer control strategy. The mixing box also has the flexibility to provide a wide variety of filtration options, including 2-inch flat or angled filters and 2-inch/4-inch combination flat filters.

Effectively controlling particulates by removing them from the air stream is key to good IAQ. That necessitates proper filter selection. In addition to mixing box/filter sections, filter sections are also available with angled or flat filters.

Figure 8. Electric heat

## Electric Heat Section

In addition to hydronic and steam coil options, the unit is also available with a unit mounted electric heater in the reheat position. The unit will have single point power connection to the electric heater. The heater is available with step control or SSR-full modulating control.

# General Data

## Unit Configurations and Components

**Figure 9. Horizontal configurations and components**

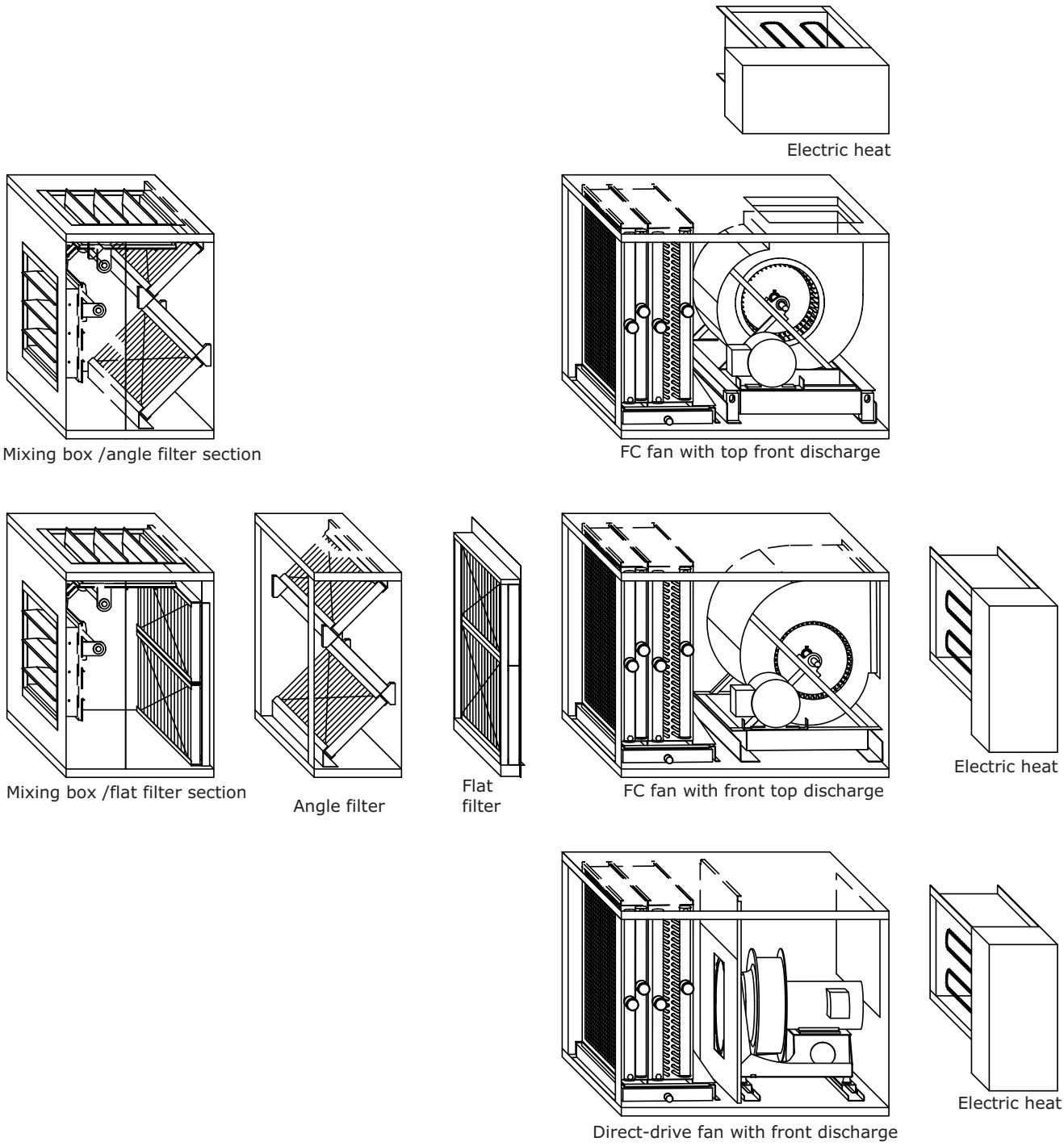


**Figure 10. Vertical configurations and components**

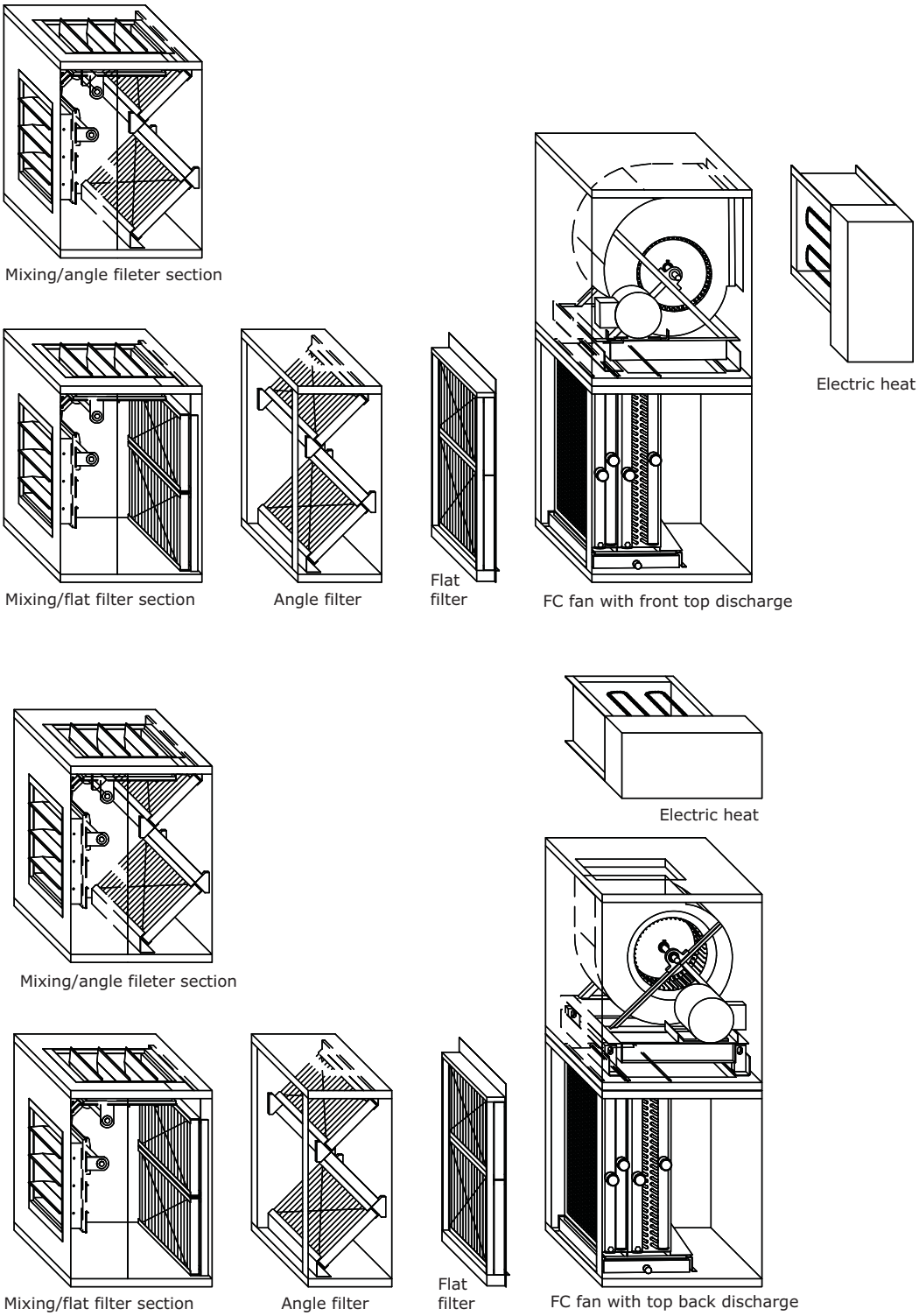


**Figure 11. Vertical configurations and components**

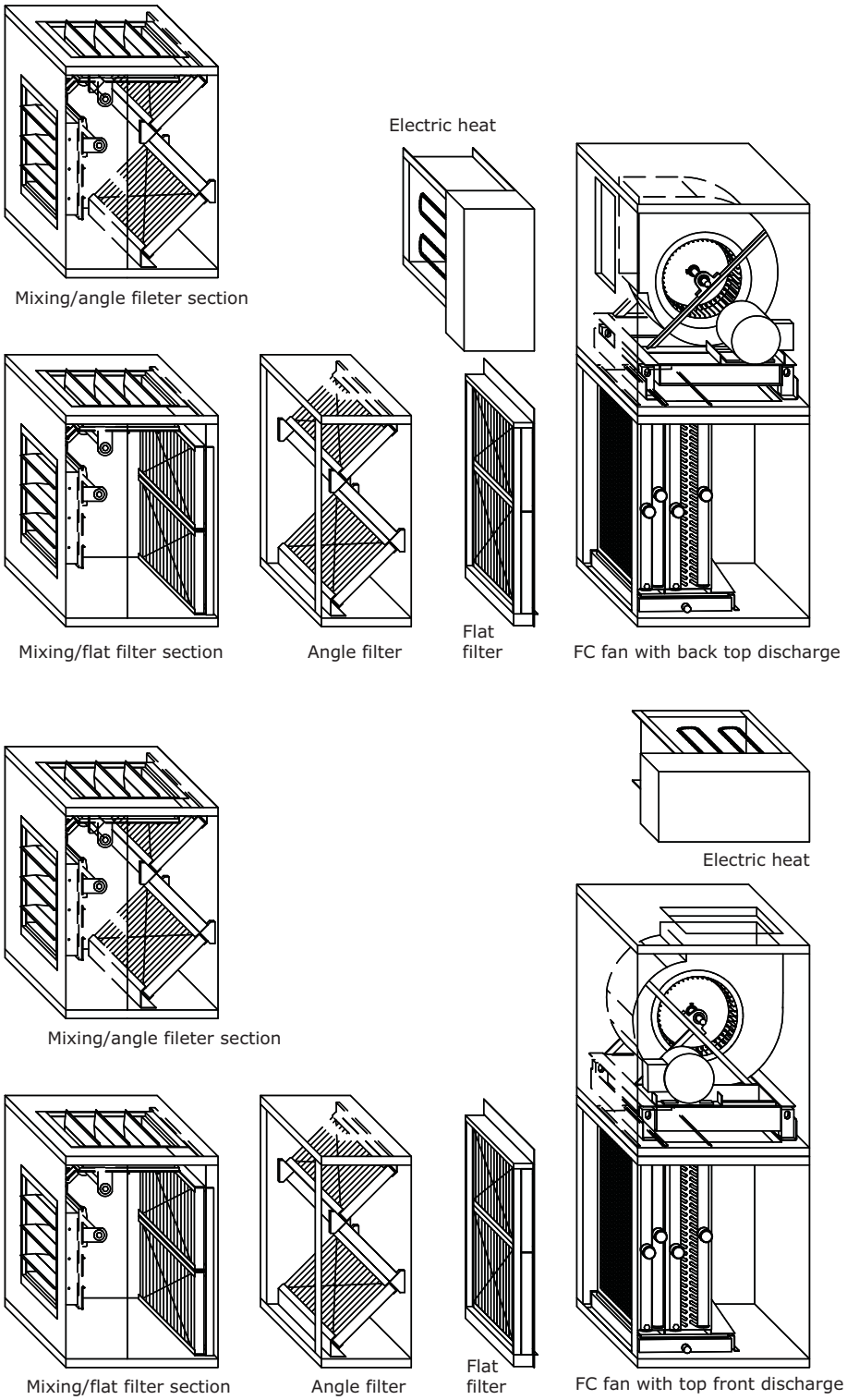


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**Table 1. Performance air handler model UCCA data**

| Nom airflow (CFM) | 1500 | 3000 | 4000 | 5000 | 6000 | 7000 | 3500 | 10500 | 12500 | 15000 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Unit size** | **3** | **6** | **8** | **10** | **12** | **14** | **7** | **21** | **25** | **30** |
| Horz unit height (in.) | 27.50 | 32.50 | 38.00 | 38.00 | 41.80 | 45.60 | 48.10 | 54.30 | 60.60 | 60.60 |
| Horz unit width (in.) | 34.00 | 47.00 | 51.00 | 63.00 | 71.00 | 71.00 | 79.00 | 79.00 | 81.00 | 94.00 |
| Horz unit length (in.) | 51.90 | 54.90 | 52.30 | 54.70 | 54.70 | 56.20 | 60.20 | 60.20 | 62.90 | 69.60 |
| Vert unit height (in.) | 51.40 | 61.30 | 65.10 | 69.90 | 80.10 | 83.80 | 92.90 | 99.20 | n/a | n/a |
| Vert unit width (in.) | 34.00 | 47.00 | 51.00 | 63.00 | 71.00 | 71.00 | 79.00 | 79.00 | n/a | n/a |
| Vert unit length (in.) | 34.10 | 37.10 | 29.40 | 32.10 | 36.10 | 36.10 | 42.10 | 42.10 | n/a | n/a |
| **Coils** | | | | | | | | | | |
| **Hydronic / DX coils** | | | | | | | | | | |
| Area ($ft^2$) | 2.80 | 5.60 | 7.60 | 9.90 | 12.30 | 14.30 | 16.30 | 20.4.00 | 24.00 | 28.50 |
| Width (in.) | 17.50 | 22.50 | 27.50 | 27.50 | 30.00 | 35.00 | 35.00 | 43.75 | 50.00 | 50.00 |
| Length (in.) | 23.00 | 36.00 | 40.00 | 52.00 | 59.00 | 59.00 | 67.00 | 67.00 | 69.00 | 82.00 |
| Velocity (fpm) | 536.60 | 533.30 | 523.60 | 503.50 | 488.10 | 488.1 | 522.00 | 515.80 | 521.70 | 526.80 |
| Dry Weight (lb.) | | | | | | | | | | |
| - 1-row | 26 | 39 | 47 | 58 | 72 | 80 | 87 | 112 | 126 | 145 |
| - 2-row | 35 | 55 | 69 | 86 | 107 | 120 | 132 | 168 | 192 | 223 |
| - 4-row | 53 | 89 | 114 | 144 | 177 | 201 | 223 | 281 | 325 | 380 |
| - 6-row | 72 | 122 | 158 | 201 | 247 | 282 | 314 | 394 | 457 | 536 |
| - 8-row | 90 | 156 | 203 | 258 | 316 | 363 | 405 | 507 | 589 | 693 |
| Wet Weight (lb.) | | | | | | | | | | |
| - 1-row | 29 | 43 | 53 | 66 | 82 | 91 | 99 | 128 | 145 | 167 |
| - 2-row | 40 | 64 | 81 | 102 | 127 | 143 | 158 | 200 | 230 | 268 |
| - 4-row | 63 | 107 | 138 | 175 | 216 | 247 | 274 | 345 | 400 | 470 |
| - 6-row | 85 | 149 | 195 | 248 | 305 | 350 | 391 | 491 | 570 | 671 |
| - 8-row | 108 | 192 | 251 | 321 | 394 | 454 | 508 | 636 | 740 | 873 |
| **Steam coils** | | | | | | | | | | |
| Area ($ft^2$) | 1.8 | 4.4 | 6.5 | 8.5 | 9.8 | 13.3 | 15.1 | 16.8 | 21.3 | 25.3 |
| Width (in.) | 12 | 18 | 24 | 24 | 24 | 33 | 33 | 36 | 45 | 45 |
| Length (in.) | 22 | 35 | 39 | 51 | 59 | 58 | 66 | 67 | 68 | 81 |
| Velocity (FPM) | 818 | 686 | 615 | 588 | 610 | 527 | 562 | 627 | 588 | 593 |
| Weight (lb.) | 44 | 67 | 85 | 102 | 112 | 139 | 154 | 191 | 241 | 276 |

**Table 1. Performance air handler model UCCA data**

| **Nom airflow (CFM)** | 1500 | 3000 | 4000 | 5000 | 6000 | 7000 | 3500 | 10500 | 12500 | 15000 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Unit size** | **3** | **6** | **8** | **10** | **12** | **14** | **7** | **21** | **25** | **30** |
| **Fan / Motor data** | | | | | | | | | | |
| FC fans | | | | | | | | | | |
| Wheel size (in.) | 9x7 | 12x9 | 12x12 | 15x15 | 18x15 | 18x18 | 20x15 | 20x20 | 20x18 | 22x20 |
| Maximum RPM | 2000 | 1500 | 1700 | 1400 | 1200 | 1200 | 1100 | 1000 | 1300 | 1150 |
| Motor HP | 1-2 | 1-3 | 1-5 | 1 - 5 | 1 - 7 1/2 | 1 - 7 1/2 | 1 - 10 | 2 - 15 | 3 - 15 | 1 1/2 - 15 |
| Minimum design CFM | 1050 | 2100 | 2800 | 3500 | 4200 | 4900 | 5950 | 7350 | 8750 | 10500 |
| DDP fans | | | | | | | | | | |
| Wheel size (in.) | 11 | 14 | 16 | 18 | 18 | 20 | 20 | 2 x 18 | 2 x 20 | 2 x 20 |
| Maximum RPM | 3600 | 3600 | 3400 | 3025 | 3025 | 2720 | 2720 | 3025 | 2720 | 2720 |
| Motor HP | 1-2 | 1 1/2 - 5 | 2- 7 1/2 | 3 - 7 1/2 | 3 - 10 | 3 - 15 | 3 - 15 | 3- 10 | 3- 10 | 5 - 15 |
| **Filters** (height x width) with quantity per size | | | | | | | | | | |
| 2 in. and 2/4 in. combination flat filter | | | | | | | | | | |
| - 16 x 20 | | | 4 | | 2 | 2 | 4 | 2 | | |
| - 16 x 25 | | | | 4 | 1 | 1 | | 2 | 2 | 6 |
| - 20 x 20 | | | | | 2 | 2 | 4 | 2 | | |
| - 20 x 25 | 1 | 2 | | | 1 | 1 | | 2 | 6 | 4 |
| Area ($ft^2$) | 3.5 | 6.9 | 8.9 | 11.1 | 16.3 | 16.3 | 20.0 | 22.5 | 26.4 | 30.6 |
| Nominal Velocity (fpm) | 432.0 | 432.0 | 450.0 | 450.0 | 369.2 | 430.8 | 425.0 | 466.7 | 473.7 | 490.9 |
| 2-in. Angle Filter | | | | | | | | | | |
| - 16 x 20 | | | | 2 | 6 | 6 | 6 | 4 | | 12 |
| - 16 x 25 | 2 | | | | 3 | 3 | | 8 | | |
| - 20 x 20 | | 4 | 2 | 4 | | | 6 | | | 8 |
| - 20 x 25 | | | 2 | | | | | | 12 | |
| Area ($ft^2$) | 5.6 | 11.1 | 12.5 | 15.6 | 21.7 | 21.7 | 30.0 | 31.1 | 41.7 | 48.9 |
| Nominal Velocity (fpm) | 270.0 | 270.0 | 320.0 | 321.4 | 276.9 | 323.1 | 283.3 | 337.5 | 300.0 | 306.8 |
| **Mix Box** | | | | | | | | | | |
| Damper Area ($ft^2$) | 1.3 | 2.4 | 3.1 | 4.1 | 5.1 | 5.6 | 7.0 | 8.2 | 10.3 | 12.0 |
| Nominal Velocity (fpm) | 1166.9 | 1224.7 | 1288.5 | 1205.6 | 1178.0 | 1239.2 | 1217.0 | 1277.9 | 1208.1 | 1247.1 |

**Notes:** Coil weight based on 12 fins per inch, galvanized casing
Coil width = length in direction of coil header, typically vertical.
Coil length = length of coil in direction of the coil tubes, typically horizontal and perpendicular to airflow.
Unit sizes 21-30 have two stacked steam coils
Fan wheel size is diameter x length of blade (width).
Minimum airflow limit is for units with hot water, steam, or electric heat. There is no minimum airflow for cooling-only units.

# Coil Data

**Table 2. Number of circuits and distributors**

| | Single | | | | Horizontal Face Split | | | | Intertwined | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Coil Fin | | | | Coil Fin | | | | Coil Fin | |
| Unit Size | Dist | Circuits | Width | Length | Dist | Circuits | Width | Length | Dist | Circuits | Width | Length |
| 3 | 1 | 3 | 17.50 | 23.00 | - | - | - | - | - | - | - | - |
| 6 | 1 | 5 | 22.50 | 36.00 | - | - | - | - | - | - | - | - |
| 8 | 1 | 7 | 27.50 | 40.00 | 2 | 7 | 27.50 | 40.00 | 2 | 7 | 27.50 | 40.00 |
| 10 | 1 | 10 | 27.50 | 52.00 | 2 | 10 | 27.50 | 52.00 | 2 | 10 | 27.50 | 52.00 |
| 12 | - | - | - | - | 2 | 11 | 30.00 | 59.00 | 2 | 11 | 30.00 | 59.00 |
| 14 | - | - | - | - | 2 | 13 | 35.00 | 59.00 | 2 | 13 | 35.00 | 59.00 |
| 17 | - | - | - | - | 2 | 13 | 35.00 | 67.00 | 2 | 13 | 35.00 | 67.00 |
| 21 | - | - | - | - | 2 | 17 | 43.75 | 67.00 | 4 | 17 | 43.75 | 67.00 |
| 25 | - | - | - | - | 2 | 19 | 50.00 | 69.00 | 4 | 19 | 50.00 | 69.00 |
| 30 | - | - | - | - | 4 | 39 | 50.00 | 82.00 | 4 | 39 | 50.00 | 82.00 |

# Performance Data

## Coil Data

**Table 3. Hydronic/DX coil performance data**

| Size | Width (in) | Length (in) | Coil Area ($ft^2$) |
|---|---|---|---|
| 3 | 17.50 | 23.00 | 2.80 |
| 6 | 22.50 | 36.00 | 5.60 |
| 8 | 27.50 | 40.00 | 7.60 |
| 10 | 27.50 | 52.0 | 9.90 |
| 12 | 30.00 | 59.00 | 12.30 |
| 14 | 35.00 | 59.00 | 14.30 |
| 17 | 35.00 | 67.00 | 16.30 |
| 21 | 43.75 | 67.00 | 20.40 |
| 25 | 50.00 | 69.00 | 24.00 |
| 30 | 50.00 | 82.00 | 28.50 |

**Table 4. Steam coil performance data**

| Size | Width (in) | Length (in) | Coil Area ($ft^2$) |
|---|---|---|---|
| 3 | 12.00 | 22.00 | 1.80 |
| 6 | 18.00 | 35.00 | 4.40 |
| 8 | 24.00 | 39.00 | 6.50 |
| 10 | 24.00 | 51.00 | 8.50 |
| 12 | 24.00 | 59.00 | 9.80 |
| 14 | 33.00 | 58.00 | 13.30 |
| 17 | 33.00 | 66.00 | 15.10 |
| 21 | 18.00 | 67.00 | 16.80 |
| | 18.00 | 67.00 | |
| 25 | 12.00 | 68.00 | 21.30 |
| | 33.00 | 68.00 | |
| 30 | 12.00 | 81.00 | 25.30 |
| | 33.00 | 81.00 | |

# Fan Motor Data

**Table 5. Fan motor data**

| Unit Size<br>Nominal Airflow (cfm) | 3<br>1500 | 6<br>3000 | 8<br>4000 | 10<br>5000 | 12<br>6000 | 14<br>7000 | 17<br>8500 | 21<br>10,500 | 25<br>12,500 | 30<br>15,000 |
|---|---|---|---|---|---|---|---|---|---|---|
| FC Fan Wheel size (in) | 9x7 | 12x9 | 12x12 | 15x15 | 18x15 | 18x18 | 20x15 | 20x20 | 20x18 | 22x20 |
| DDP Fan Wheel Size (in) | 11 | 14 | 16 | 18 | 18 | 20 | 20 | 2 x 18 | 2 x 20 | 2 x 20 |
| Maximum RPM (FC) | 2000 | 1500 | 1700 | 1400 | 1200 | 1200 | 1100 | 1000 | 1300 | 1150 |
| Maximum RPM (DDP) | 3600 | 3600 | 3400 | 3025 | 3025 | 2720 | 2720 | 3025 | 2720 | 2720 |
| Motor HP (FC) | 1-2 | 1-3 | 1-5 | 1 - 5 | 1 - 7 1/2 | 1 - 7 1/2 | 1 - 10 | 2 - 15 | 3 - 15 | 1 1/2 - 15 |
| Motor HP (DDP) | 1-2 | 1 1/2 - 5 | 2- 7 1/2 | 3 - 7 1/2 | 3 - 10 | 3 - 15 | 3 - 15 | 3- 10 | 3- 10 | 5 - 15 |
| Minimum Design CFM | 1050 | 2100 | 2800 | 3500 | 4200 | 4900 | 5950 | 7350 | 8750 | 10500 |
| Maximum Design CFM | 1800 | 3600 | 4800 | 6000 | 7200 | 8400 | 10200 | 12600 | 15000 | 18000 |

# Fan Curves

## Direct-Drive Plenum Fans

**Figure 12. Size 3 horizontal 11-inch DDP single fan**

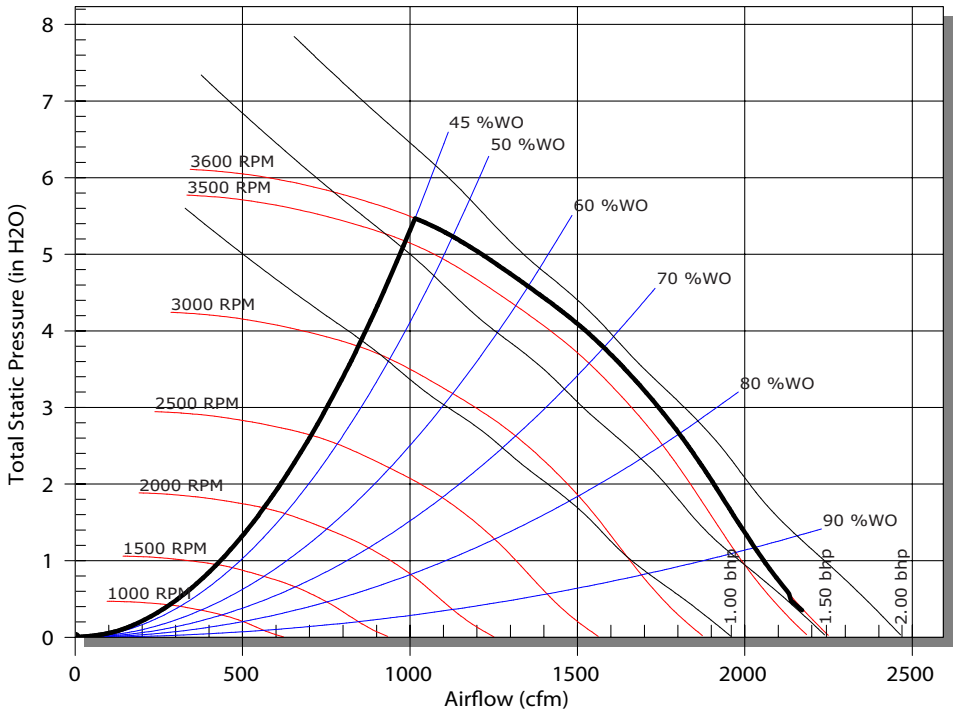


**Figure 13. Size 6 horizontal 14-inch DDP single fan**

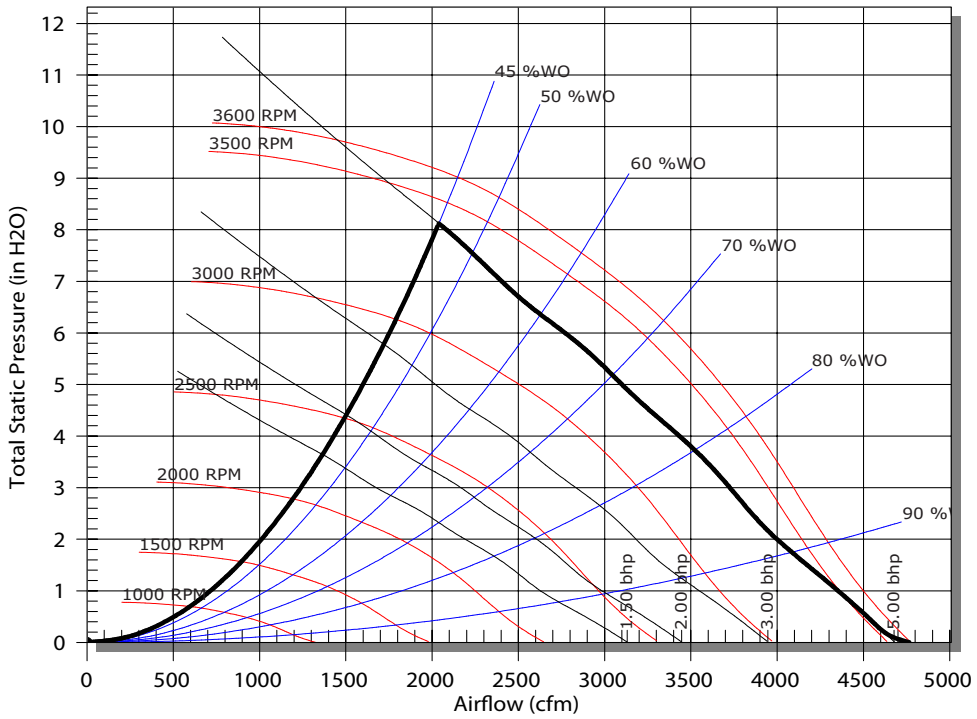



**Figure 14. Size 8 horizontal 16-inch DDP single fan**

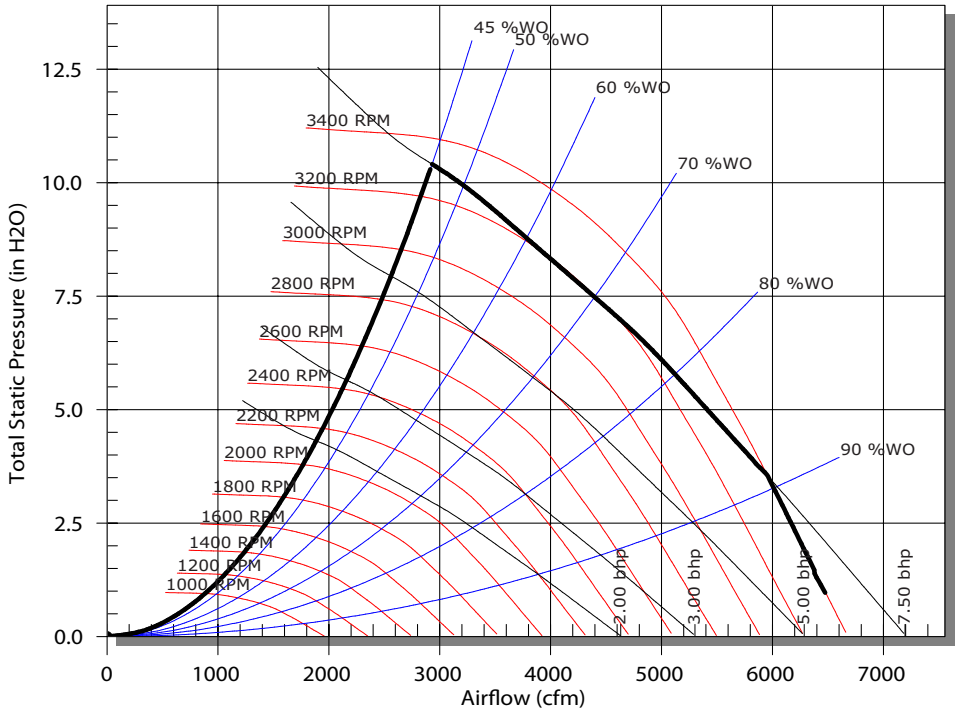


**Figure 15. Size 10 horizontal 18-inch DDP single fan**

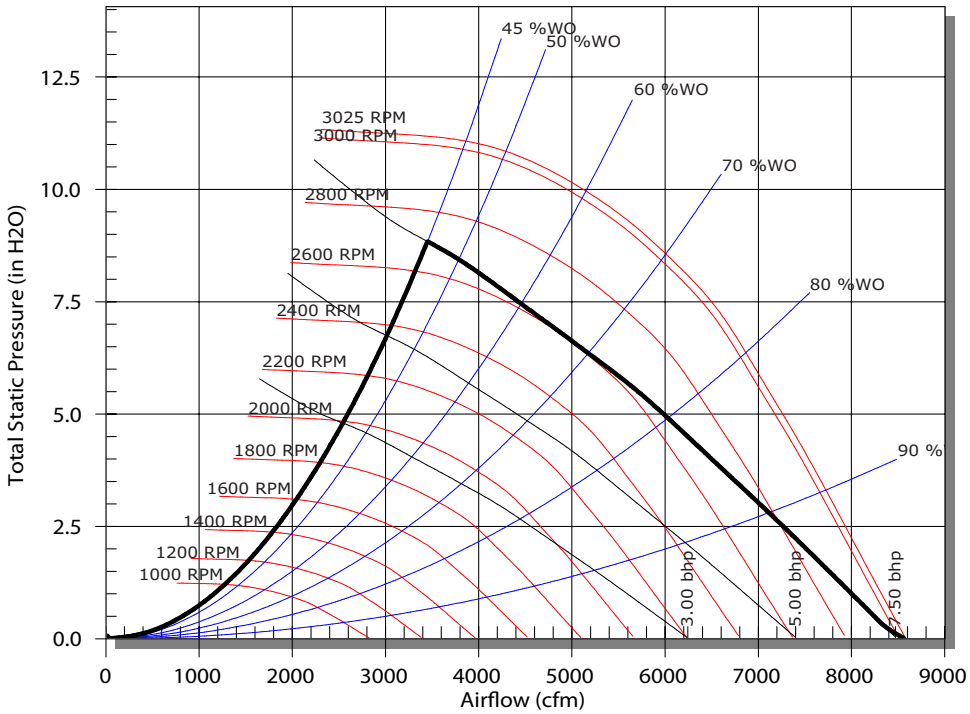



**Figure 16. Size 12 horizontal 18-inch DDP single fan**

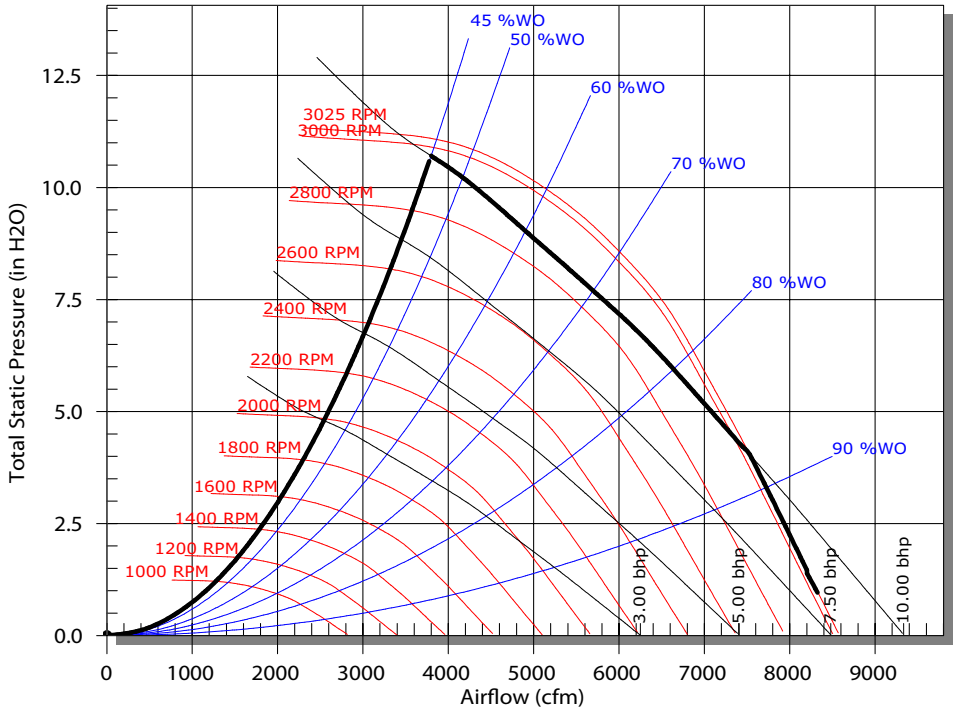


**Figure 17. Size 14 horizontal 20-inch DDP single fan**

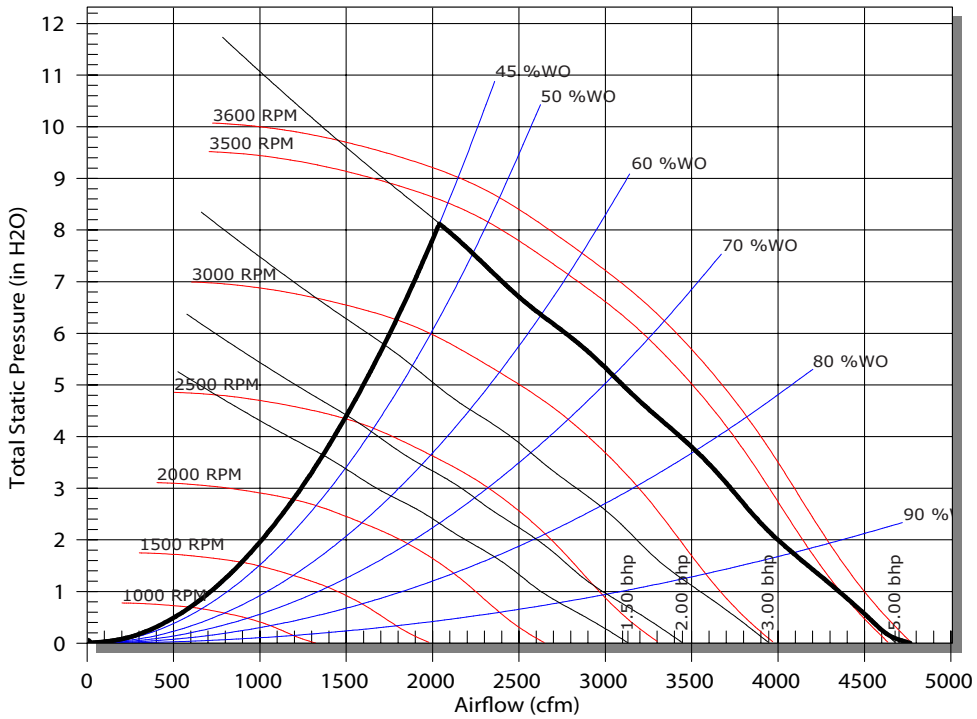



**Figure 18. Size 17 horizontal 20-inch DDP single fan**

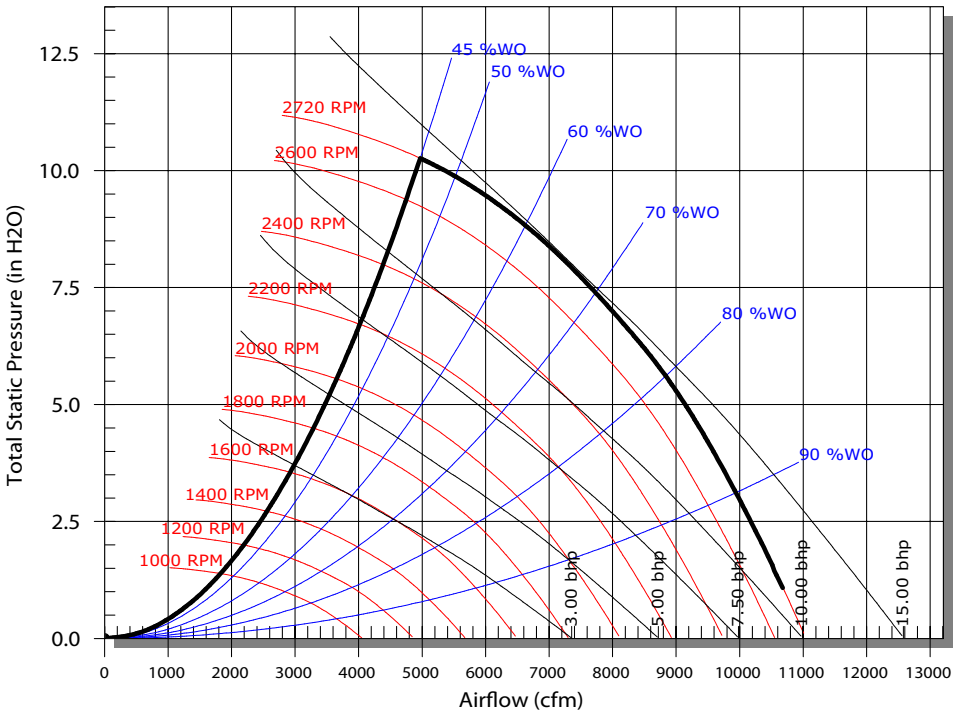


**Figure 19. Size 21 horizontal 20-inch DDP dual fan**

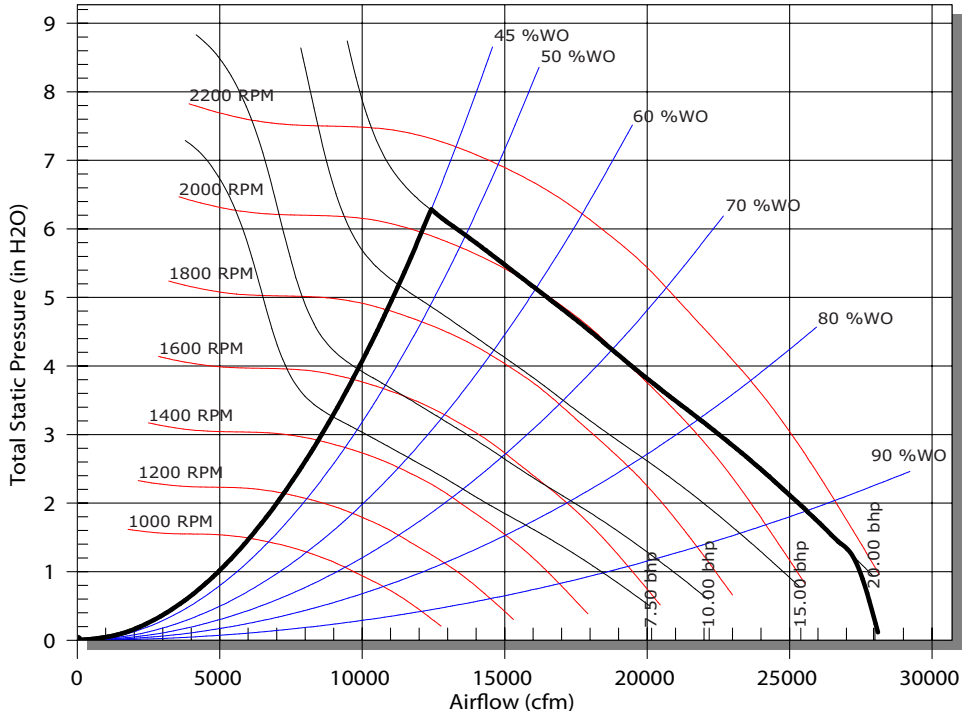



**Figure 20. Size 25 horizontal 20-inch DDP dual fan**

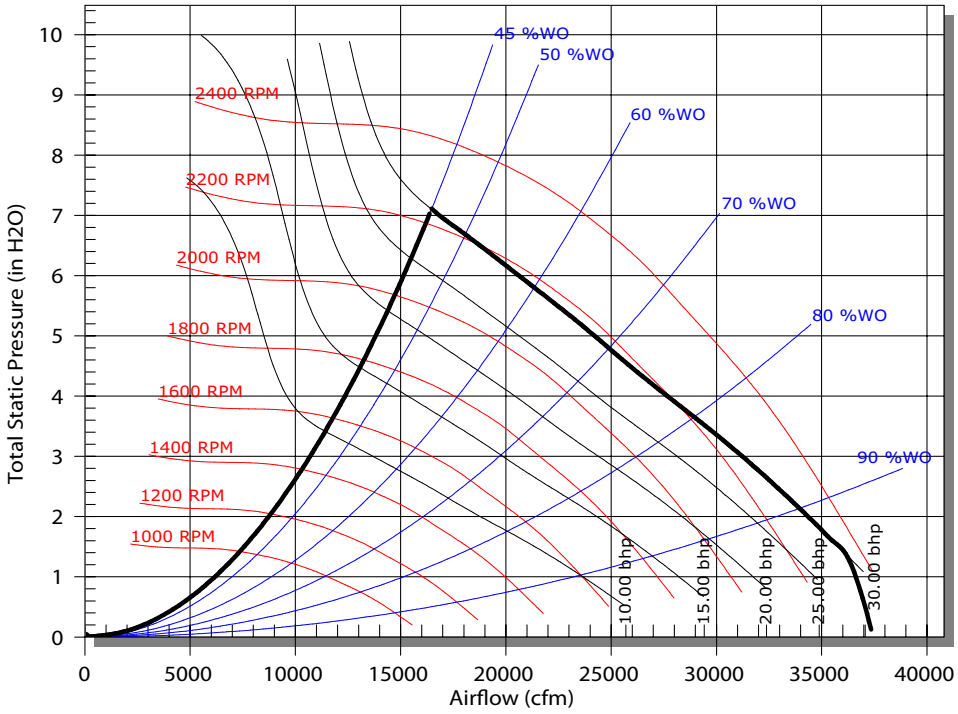
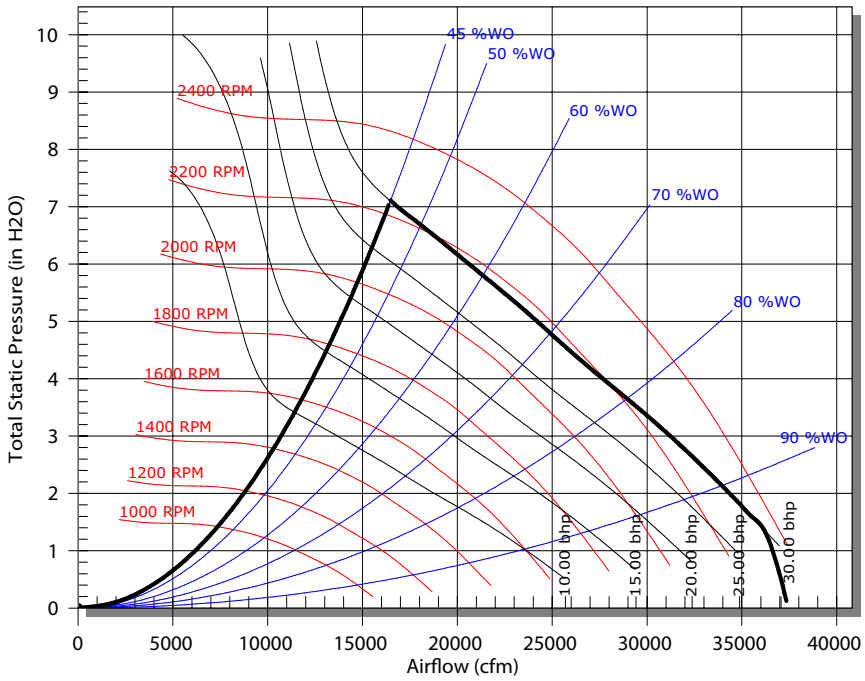


**Figure 21. Size 30 horizontal 20-inch DDP dual fan**




## FC Fans

**Figure 22. Size 3 horizontal 9 x 7 FC fan**

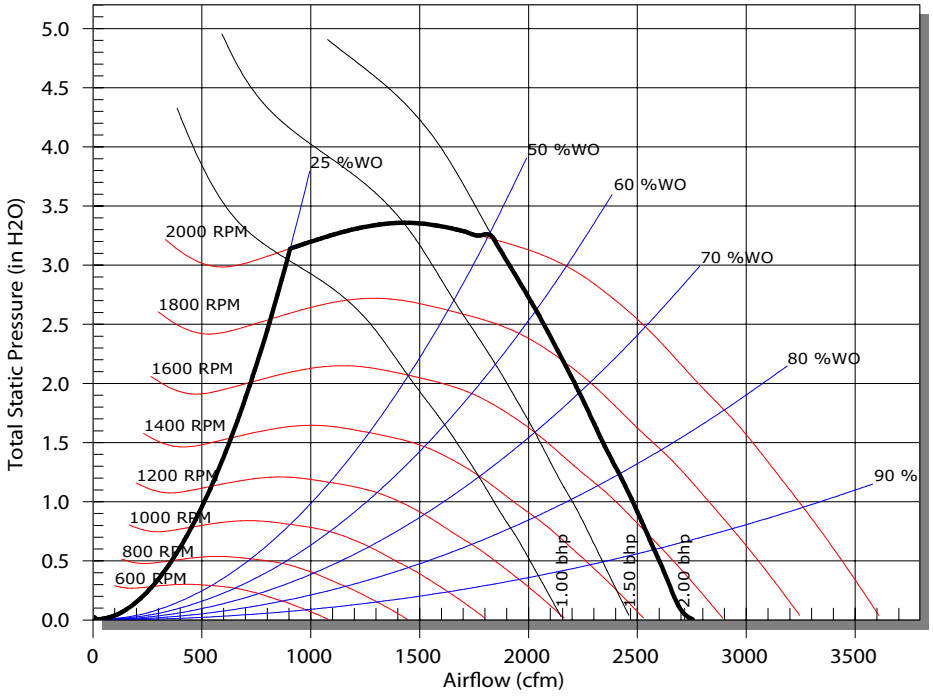


**Figure 23. Size 3 vertical back top 9 x 7 FC fan**

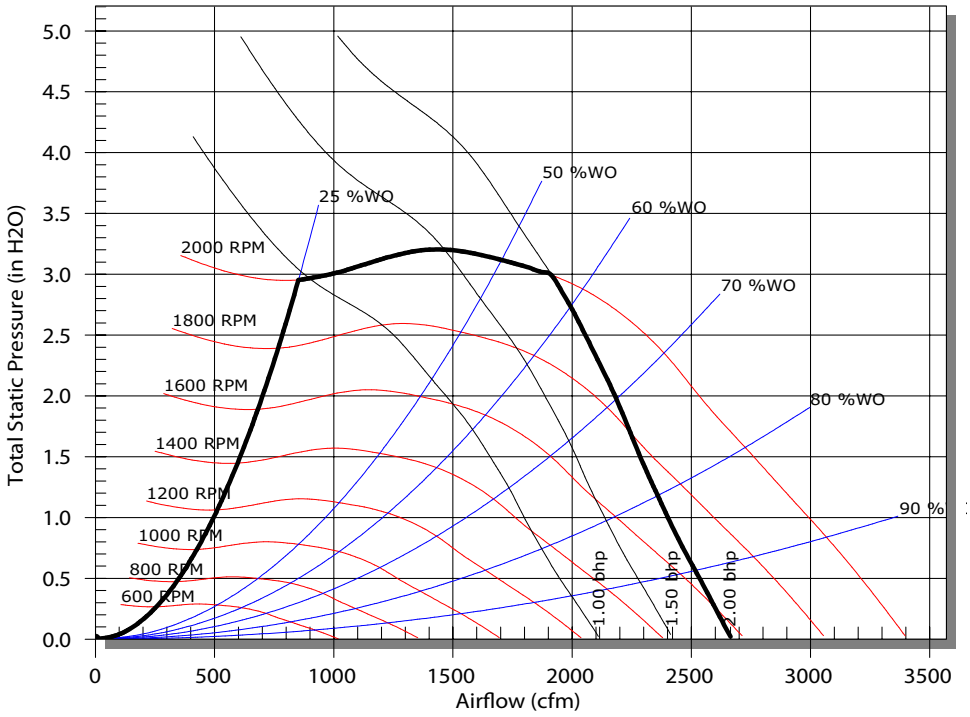



**Figure 24. Size 3 vertical front top 9 x 7 FC fan**

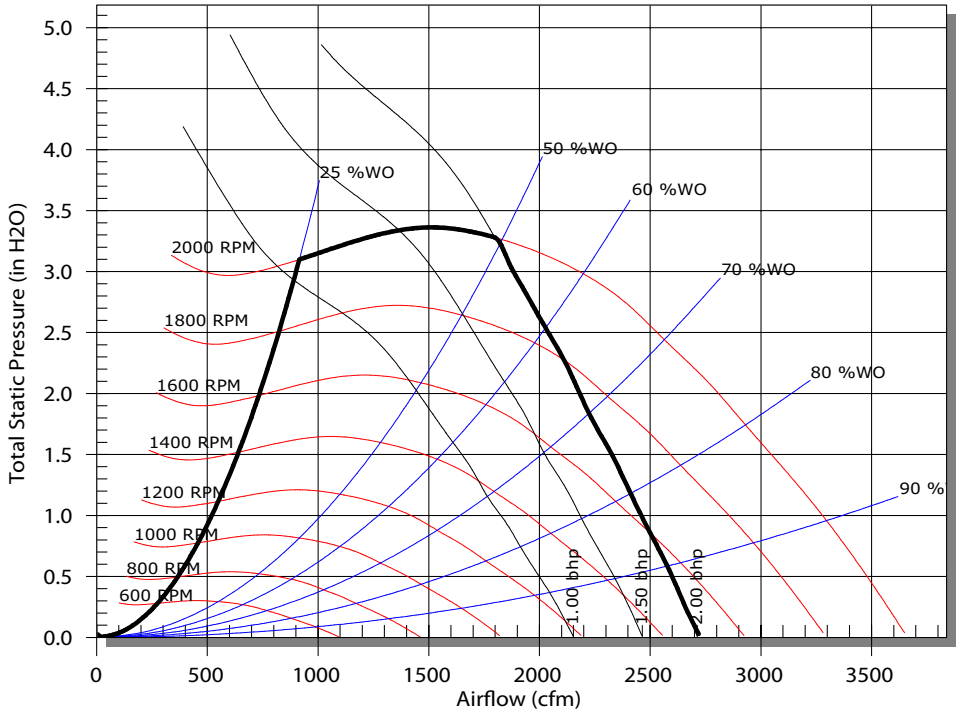


**Figure 25. Size 3 vertical top back 9 x 7 FC fan**

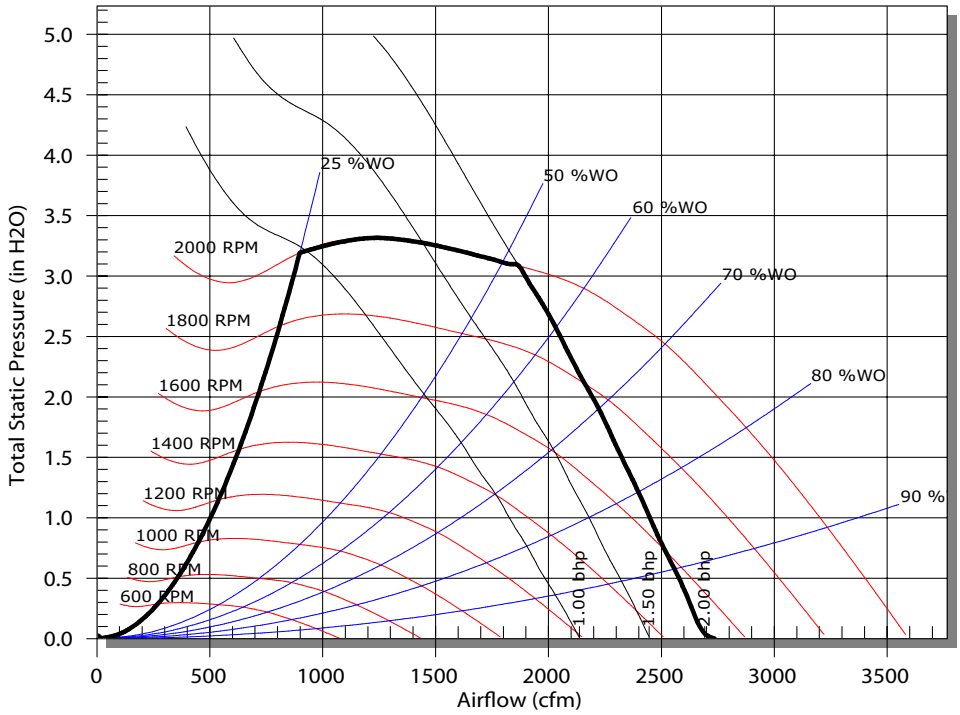



**Figure 26. Size 3 vertical top front 9 x 7 FC fan**

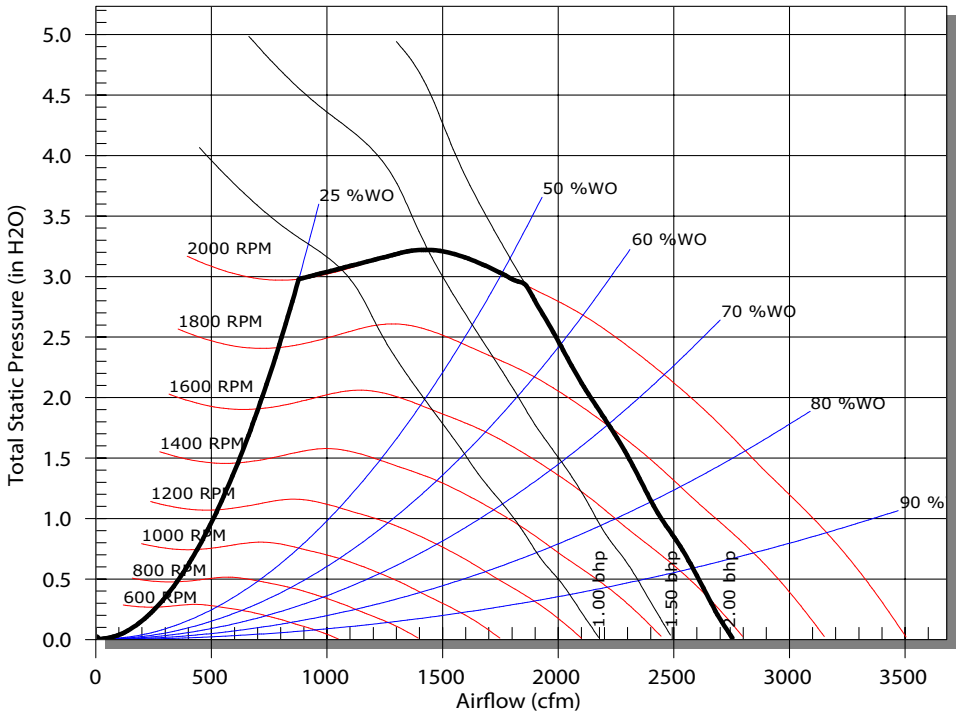


**Figure 27. Size 6 horizontal 12 x 9 FC fan**

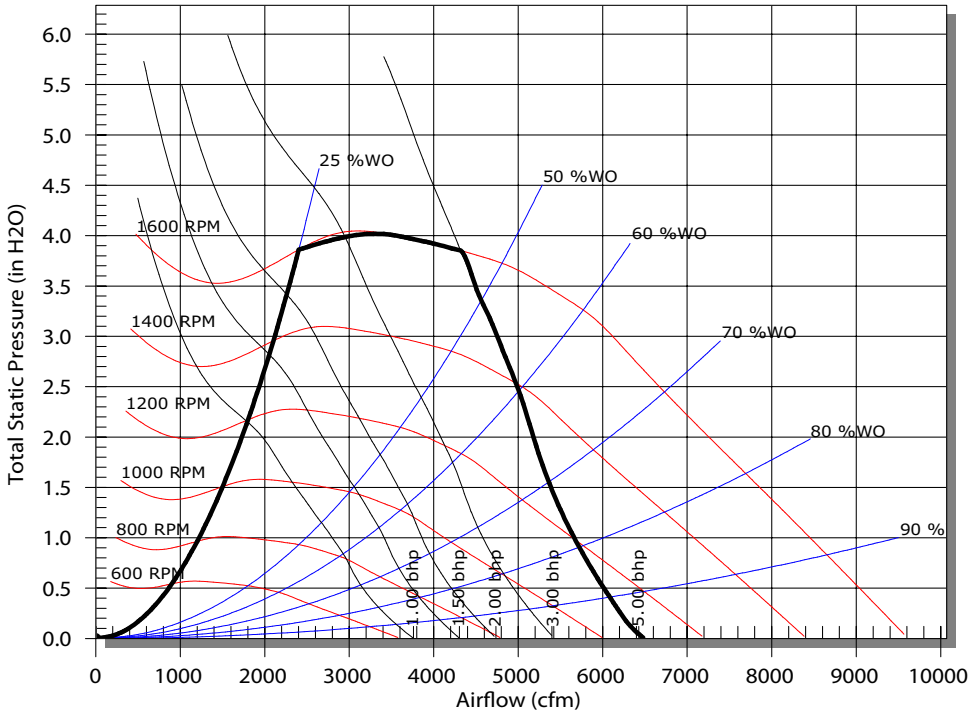



**Figure 28. Size 6 vertical back top 12 x 9 FC fan**

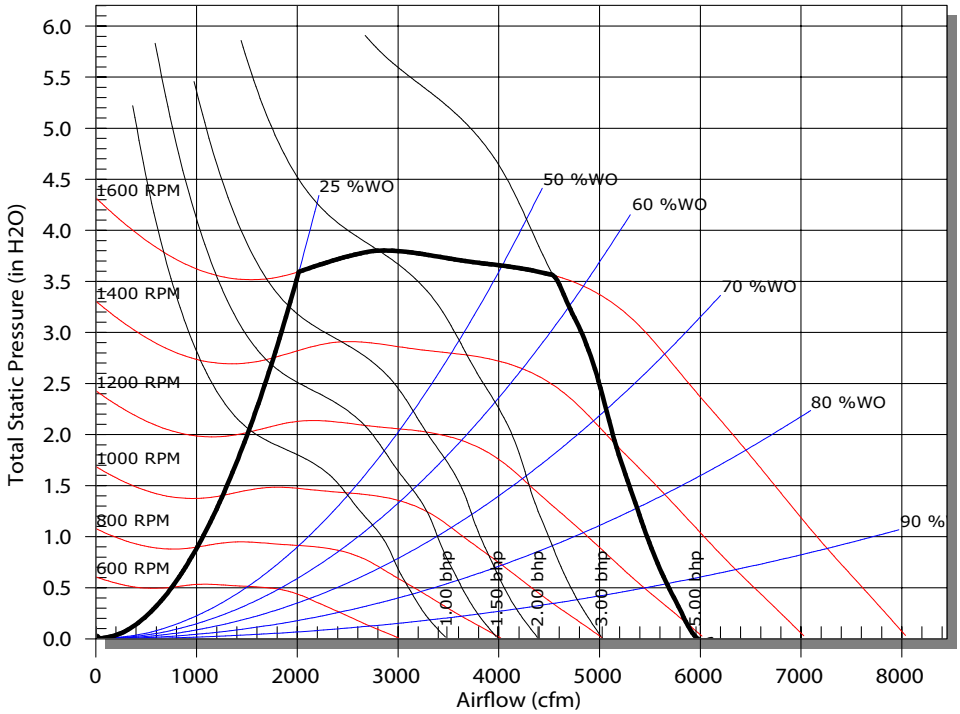


**Figure 29. Size 6 vertical front top 12 x 9 FC fan**

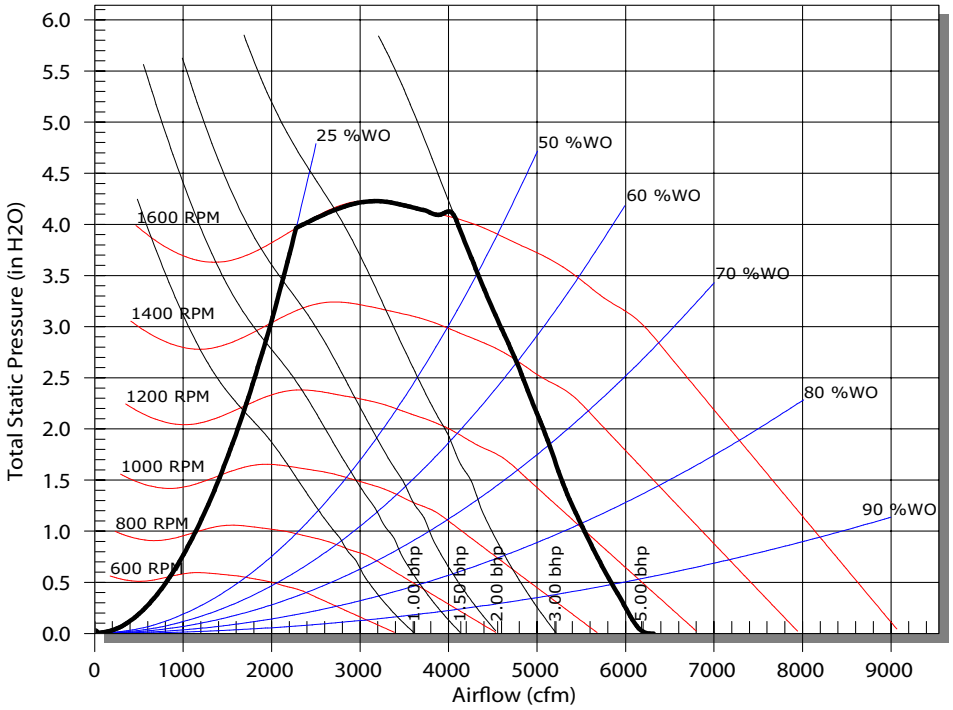



**Figure 30. Size 6 vertical top back 12 x 9 FC fan**

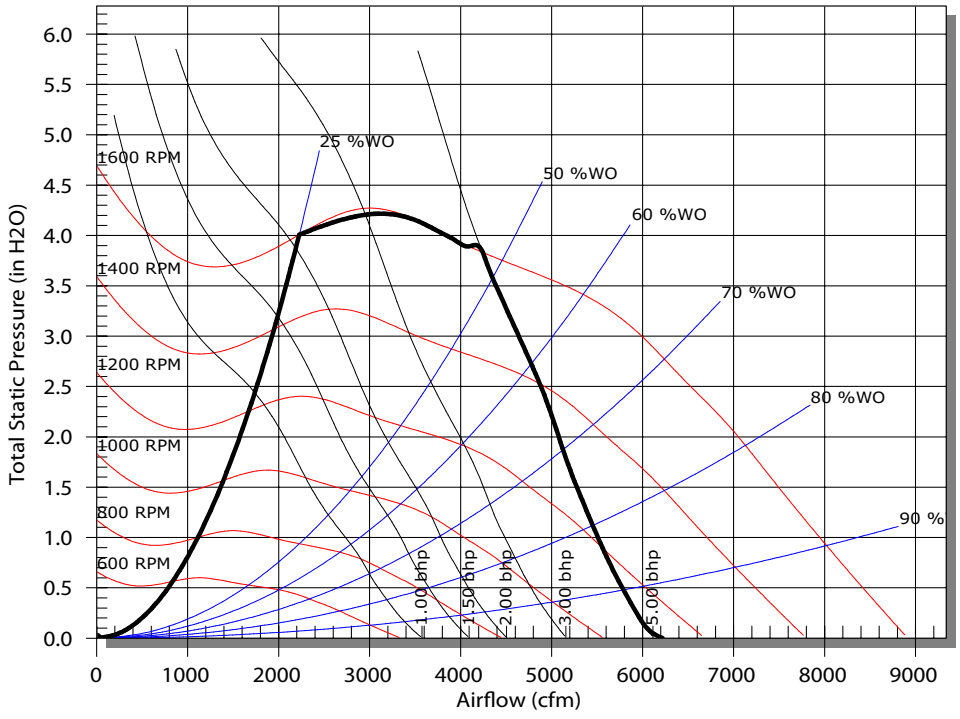


**Figure 31. Size 6 vertical top front 12 x 9 FC fan**

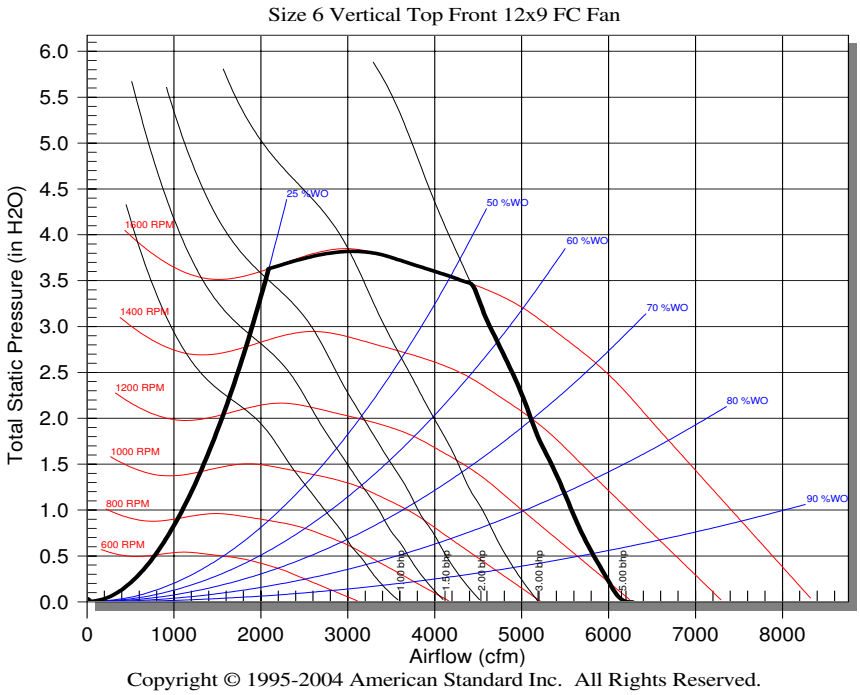


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**Figure 32. Size 8 horizontal 12 x 12 FC fan**

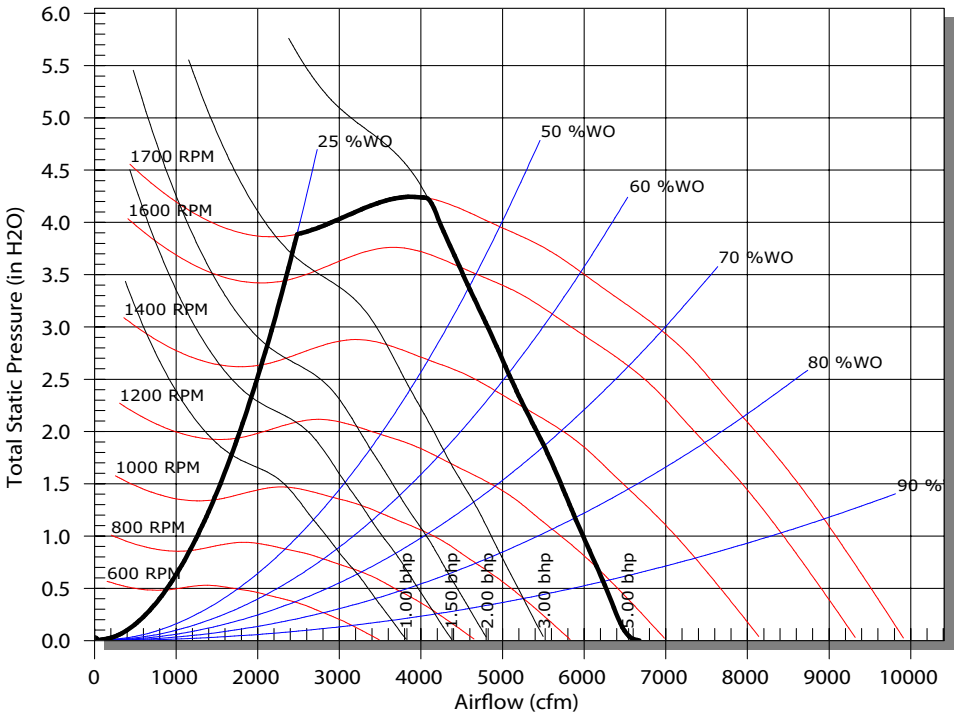


**Figure 33. Size 8 vertical back top 12 x 12 FC fan**

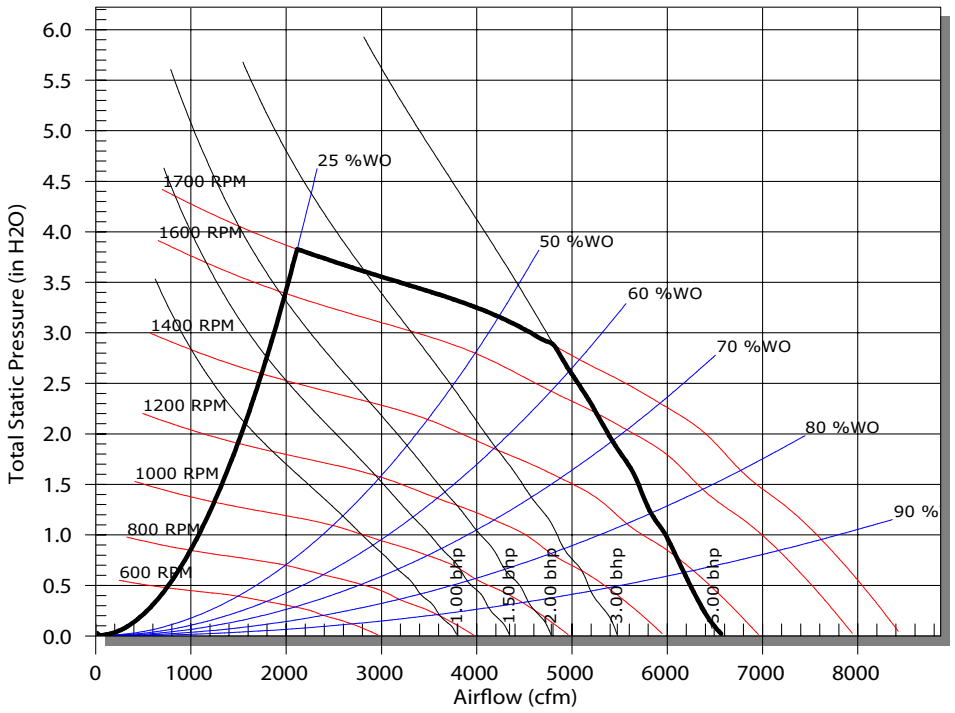



**Figure 34. Size 8 vertical front top 12 x 12 FC fan**

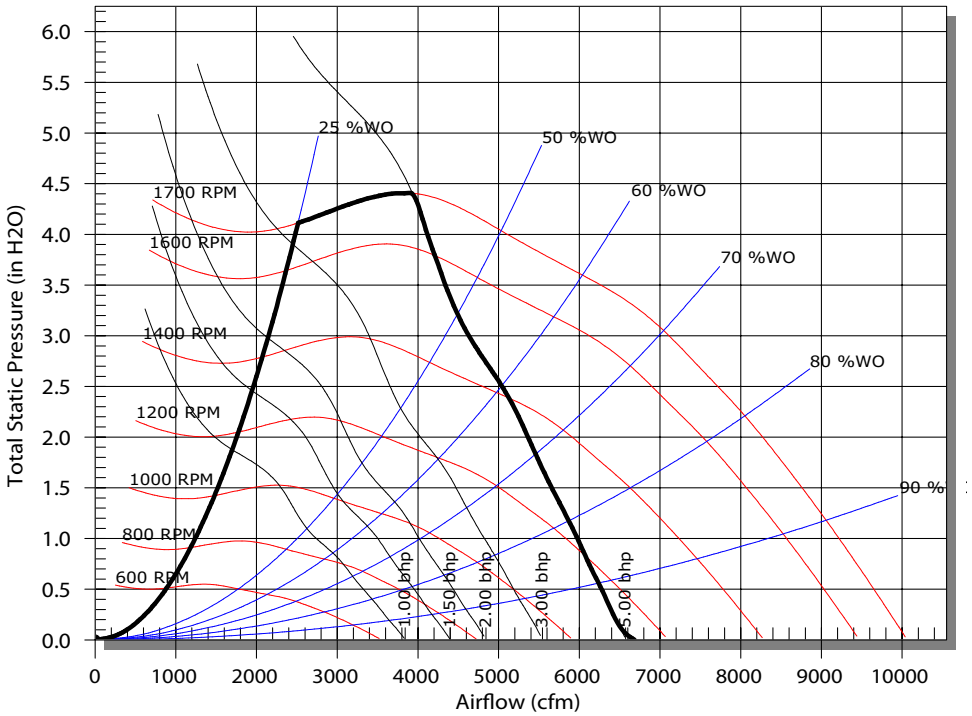


**Figure 35. Size 8 vertical top back 12 x 12 FC fan**

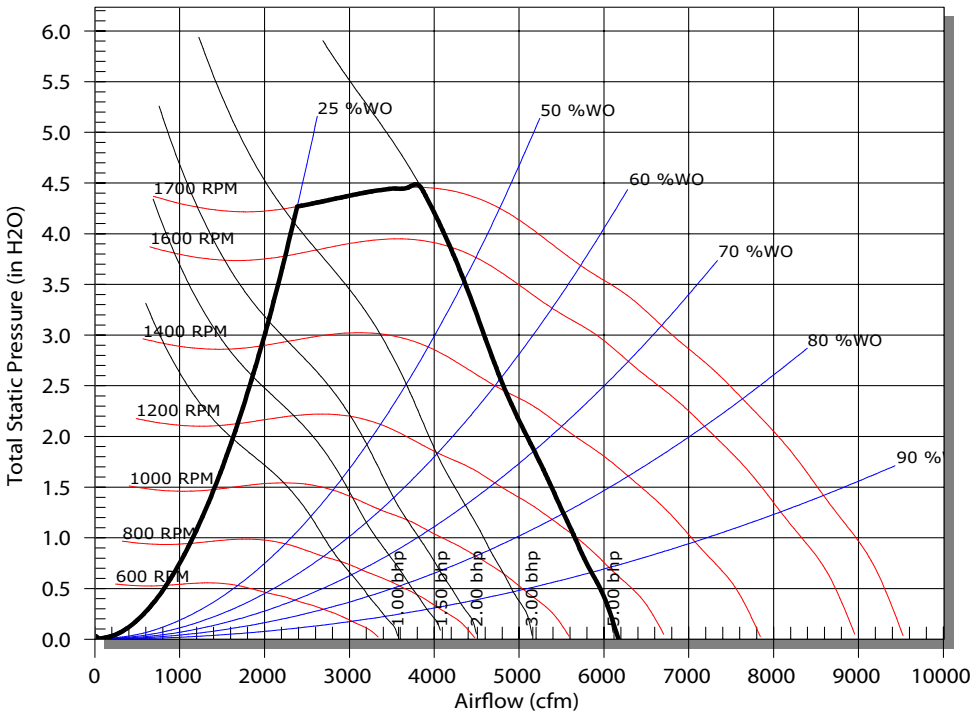



**Figure 36. Size 8 vertical top front 12 x 12 FC fan**

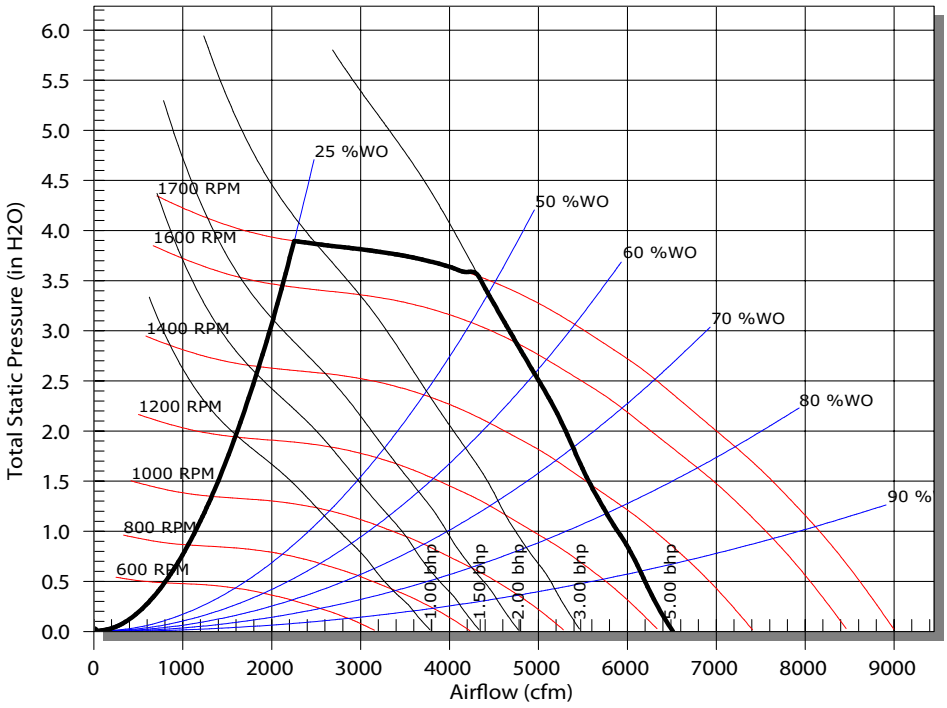


**Figure 37. Size 10 horizontal 15 x 15 FC fan**

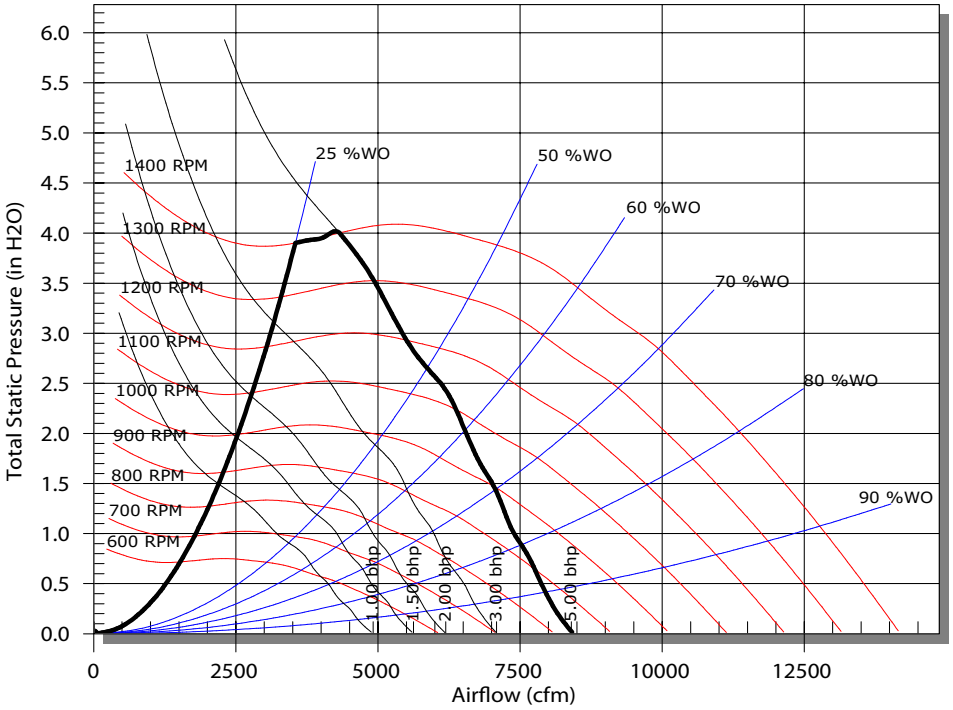



**Figure 38. Size 10 vertical back top 15 x 15 FC fan**

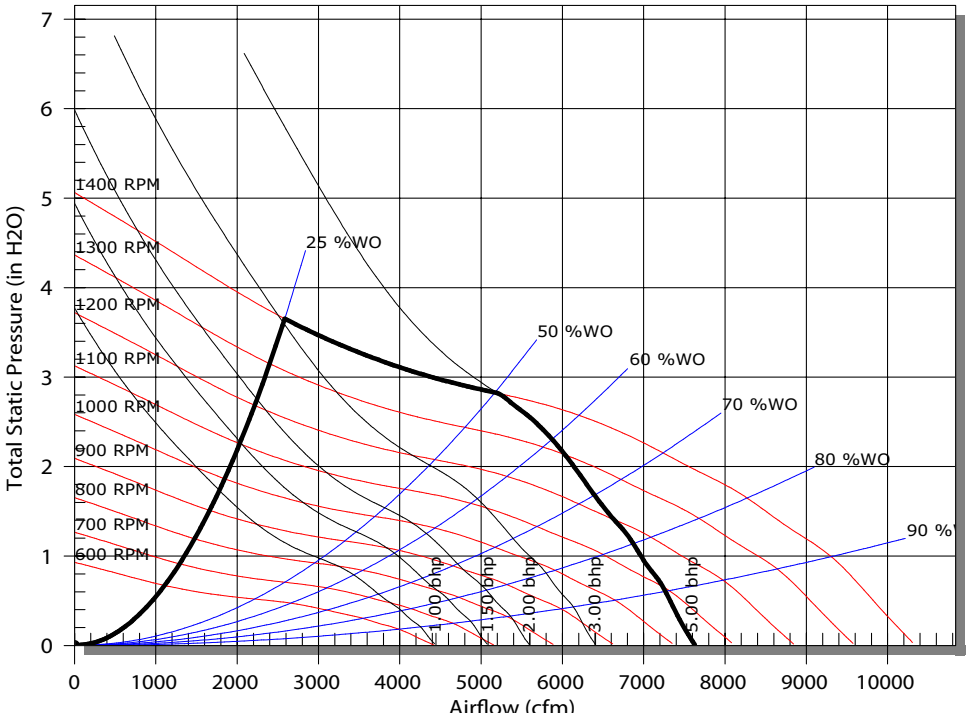


**Figure 39. Size 10 vertical front top 15 x 15 FC fan**

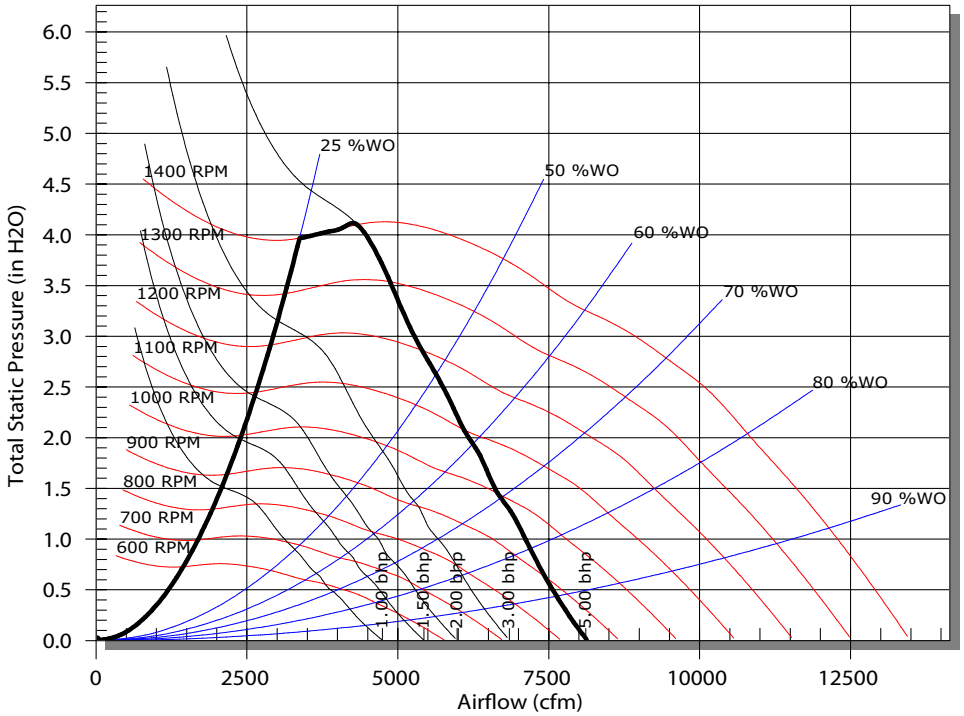



**Figure 40. Size 10 vertical top back 15 x 15 FC fan**

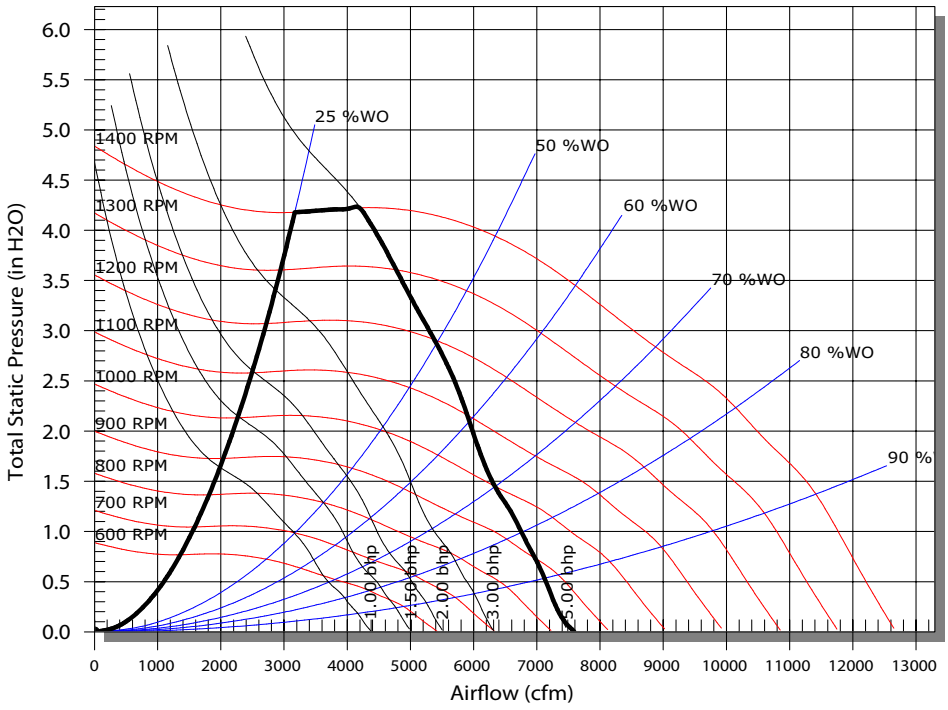


**Figure 41. Size 10 vertical top front 15 x 15 FC fan**

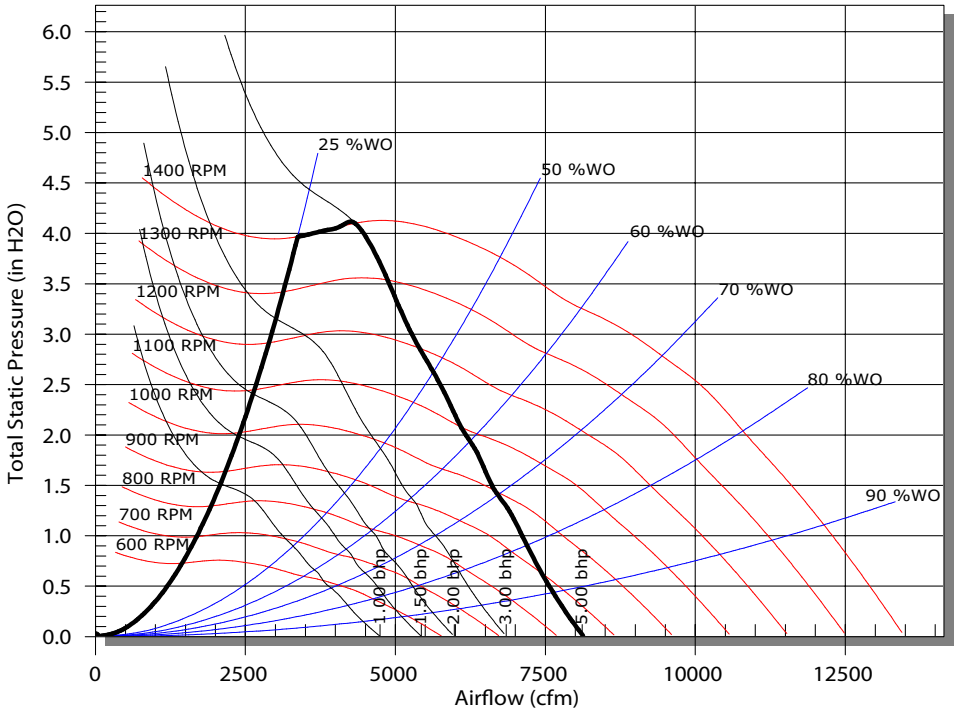



**Figure 42. Size 12 horizontal 18 x 15 FC fan**

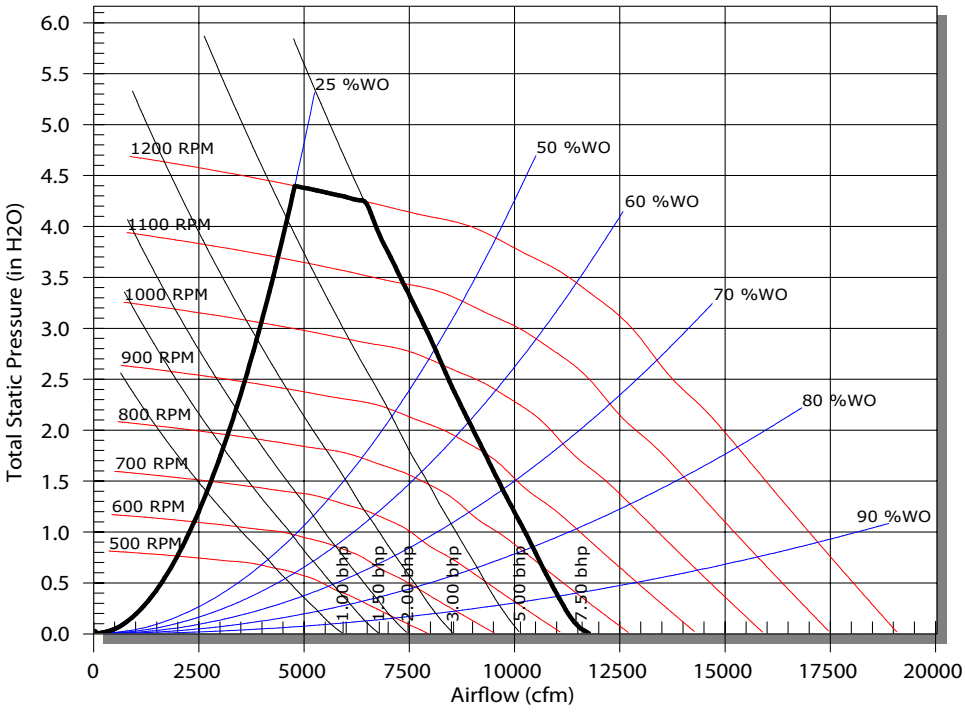


**Figure 43. Size 12 vertical back top 18 x 15 FC fan**

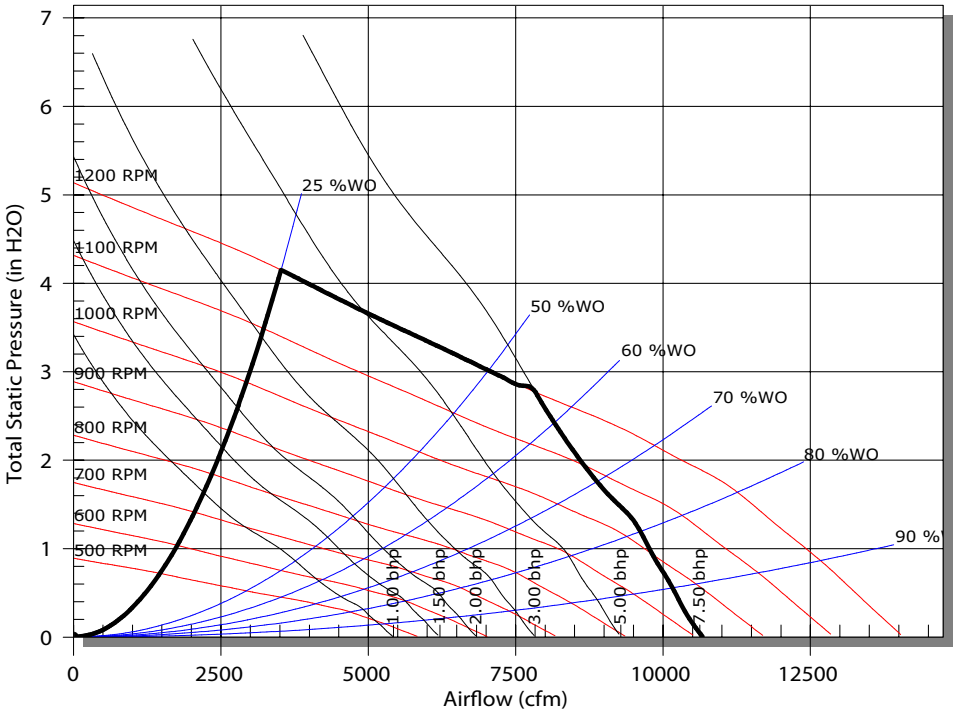



**Figure 44. Size 12 vertical front top 18 x 15 FC fan**

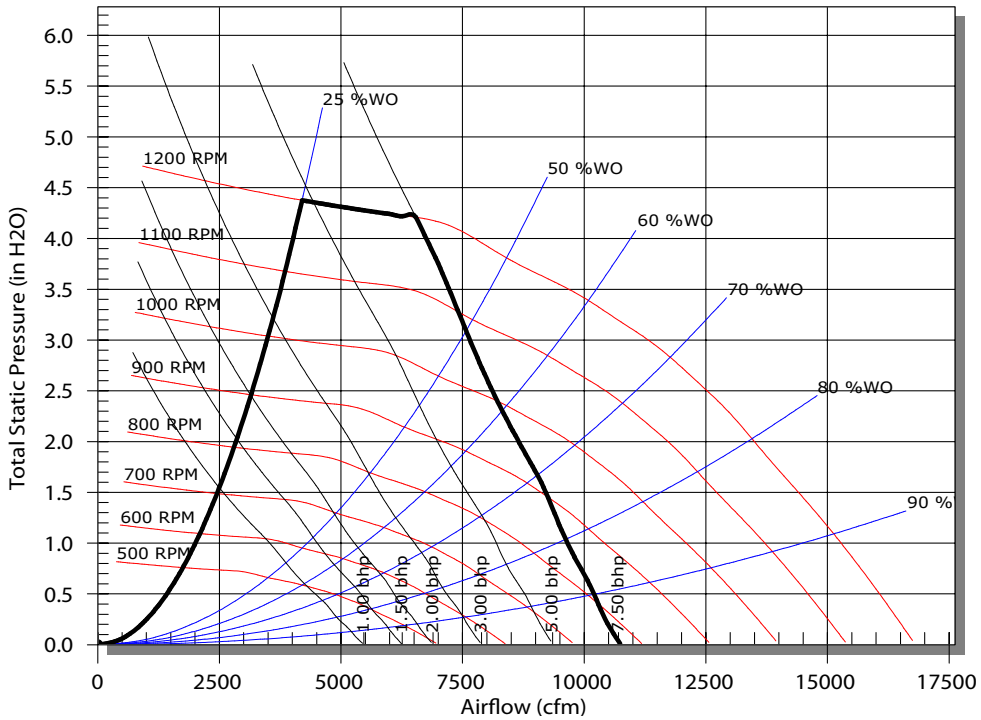


**Figure 45. Size 12 vertical top back 18 x 15 FC fan**

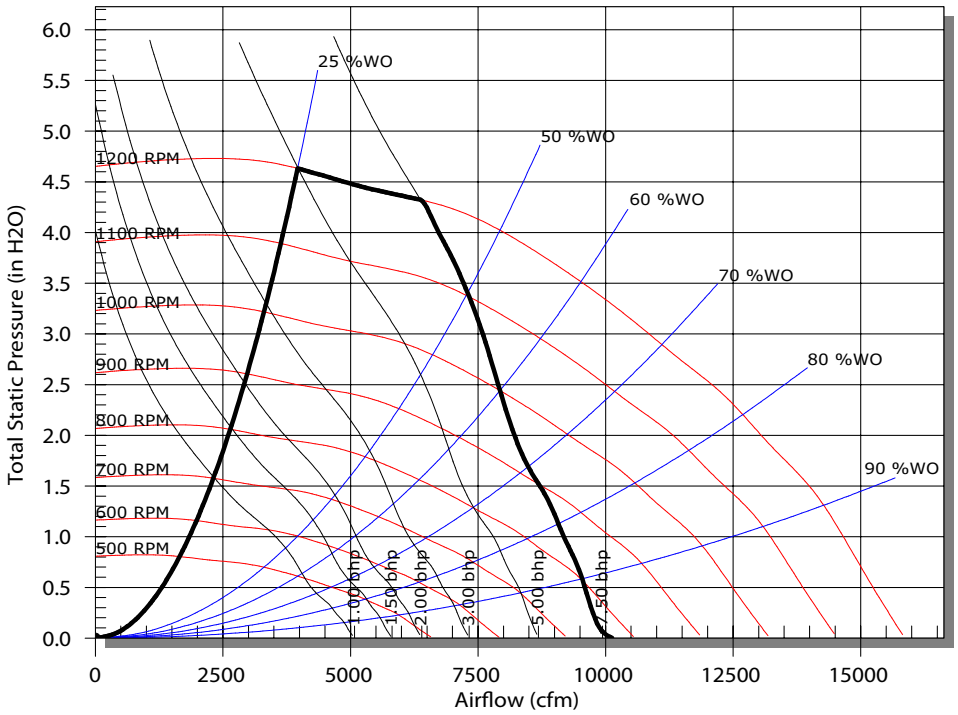



**Figure 46. Size 12 vertical top front 18 x 15 FC fan**

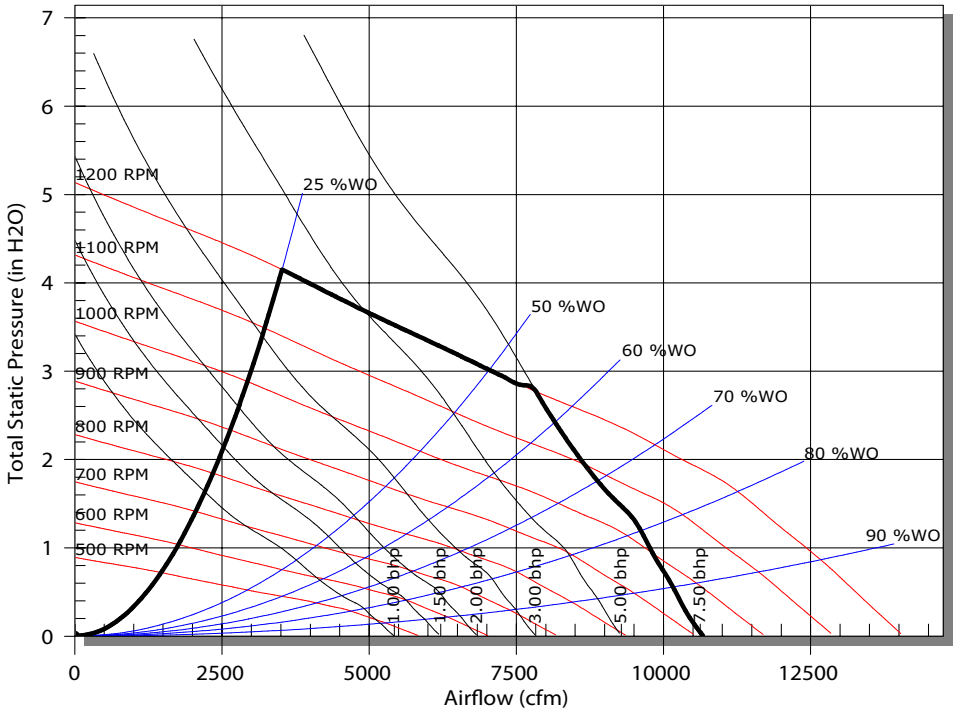


**Figure 47. Size 14 horizontal 18 x 18 FC fan**

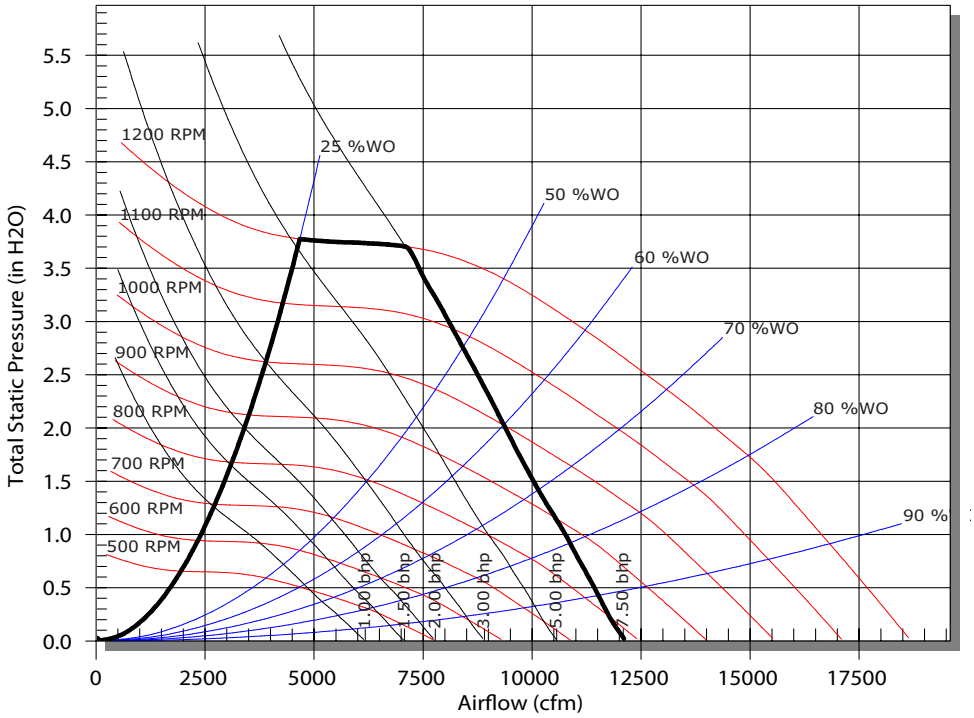



**Figure 48. Size 14 vertical back top 18 x 18 FC fan**

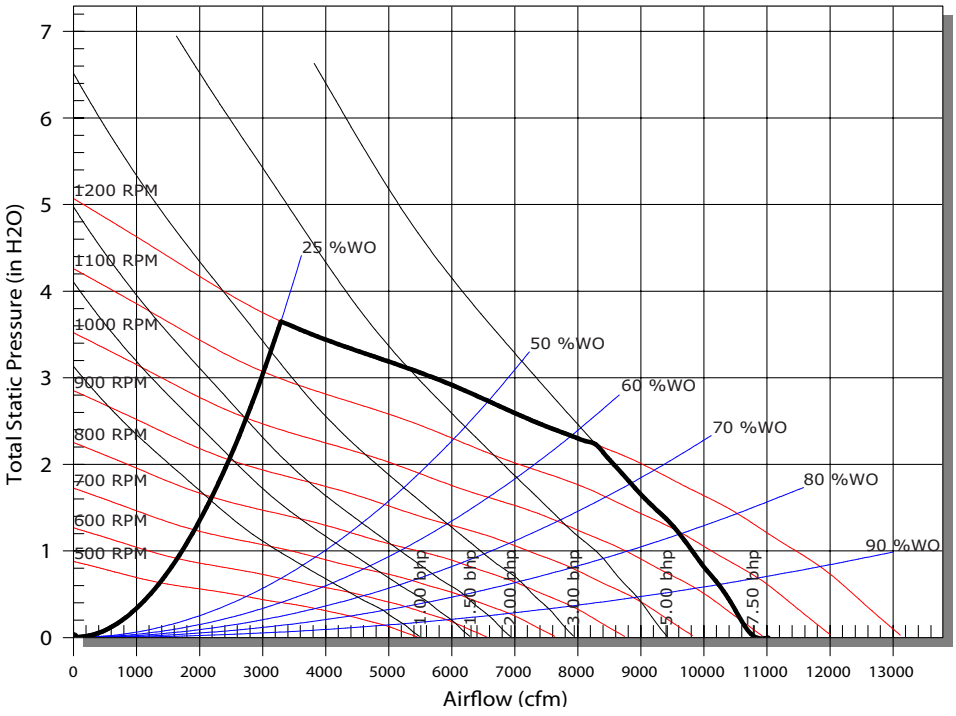


**Figure 49. Size 14 vertical front top 18 x 18 FC fan**

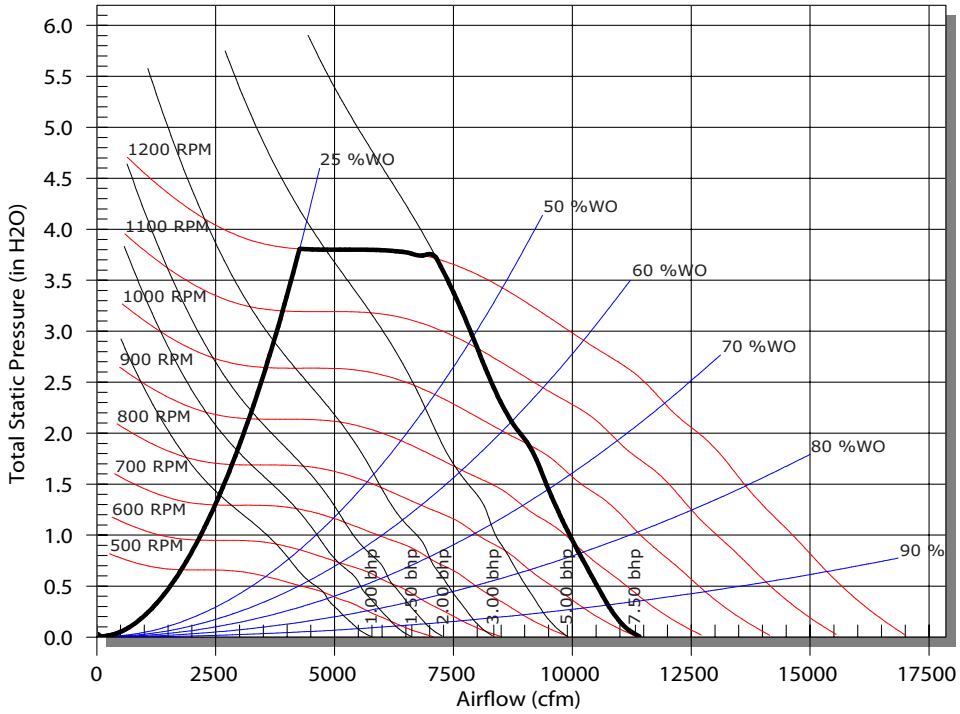



**Figure 50. Size 14 vertical top back 18 x 18 FC fan**

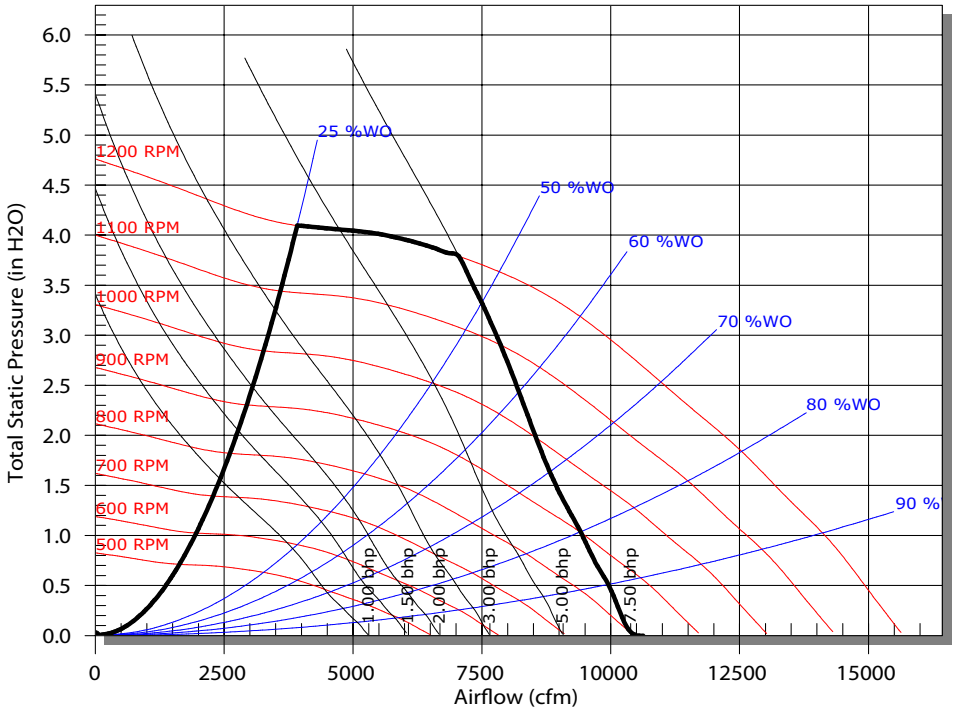


**Figure 51. Size 14 vertical top front 18 x 18 FC fan**

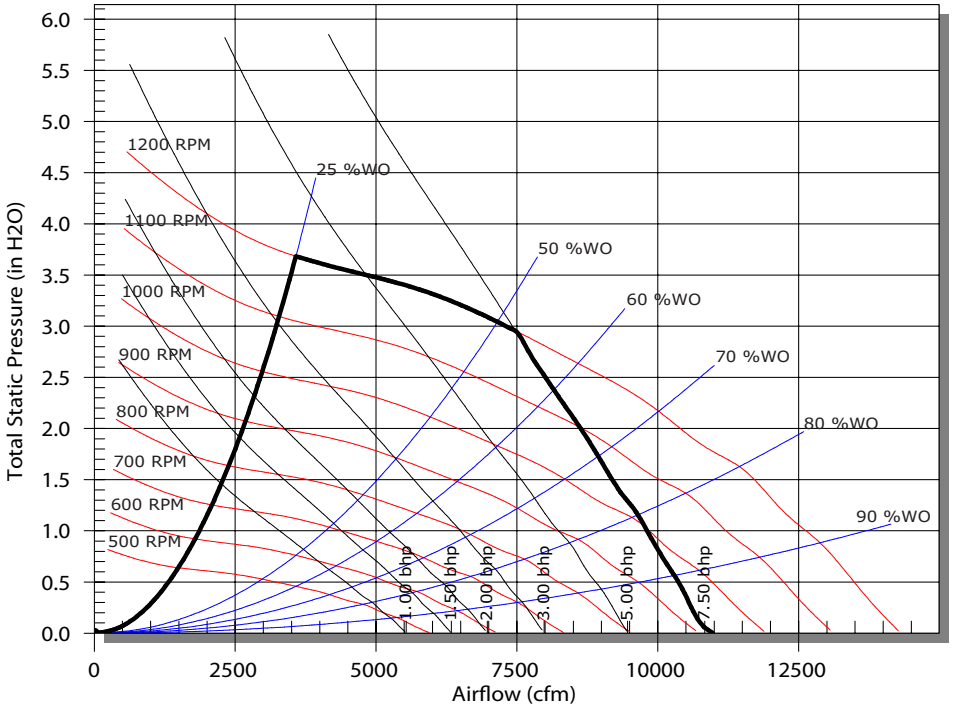



**Figure 52. Size 17 horizontal 20 x 15 FC fan**

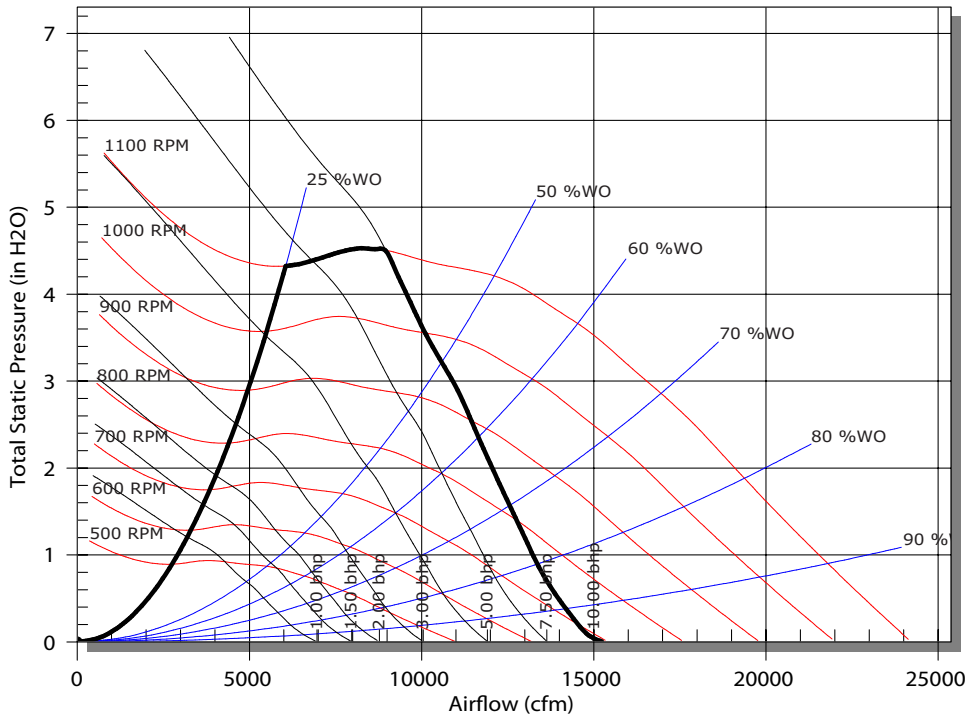


**Figure 53. Size 17 vertical back top 20 x 15 FC fan**

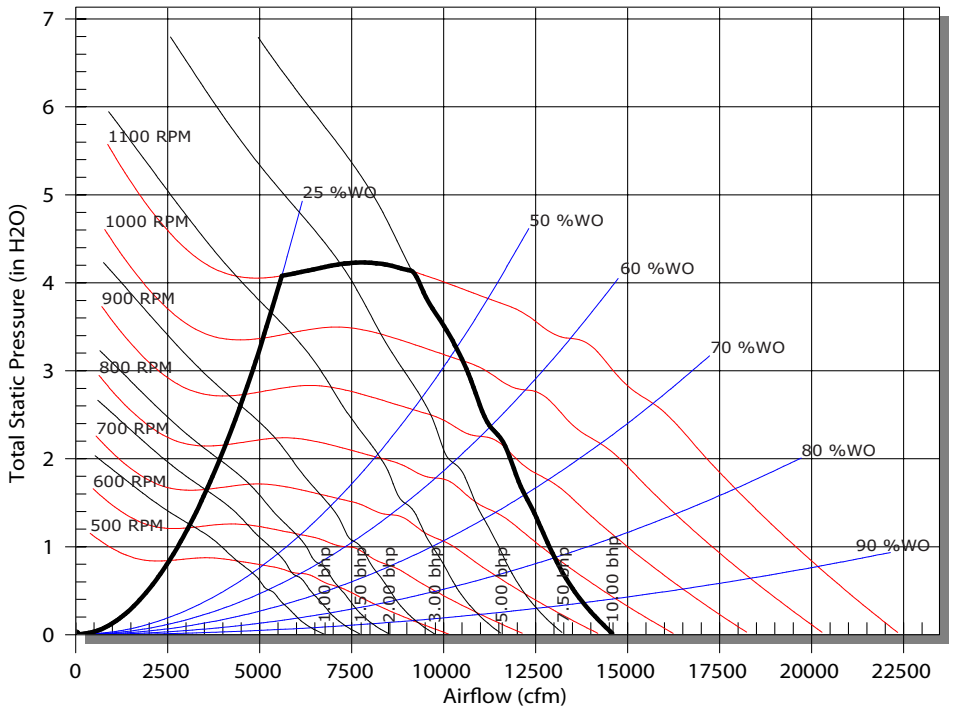



**Figure 54. Size 17 vertical front top 20 x 15 FC fan**

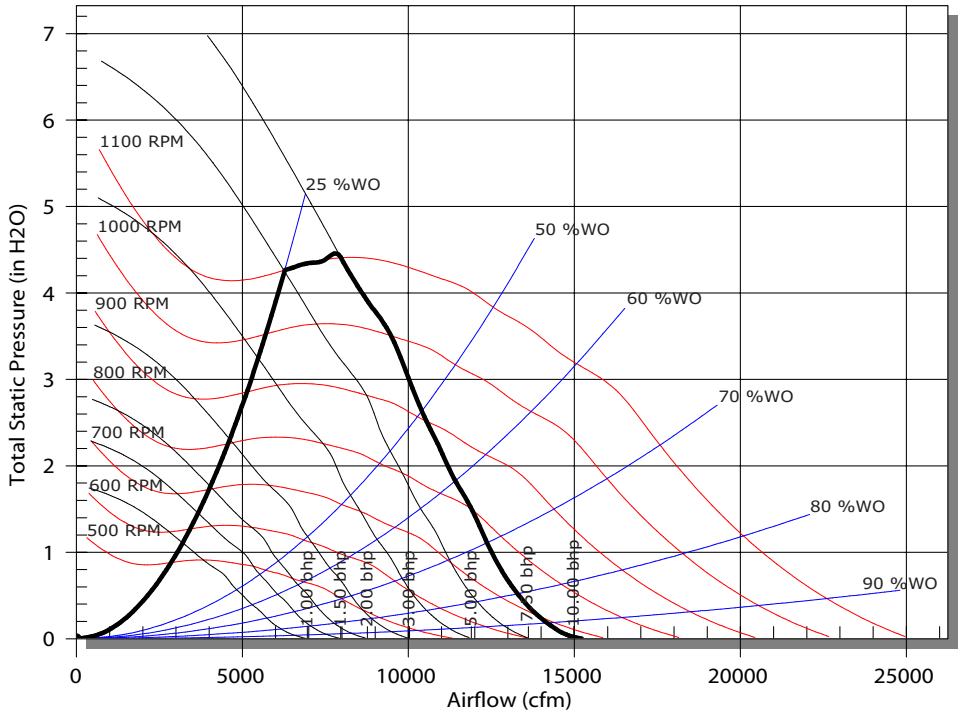


**Figure 55. Size 17 vertical top back 20 x 15 FC fan**

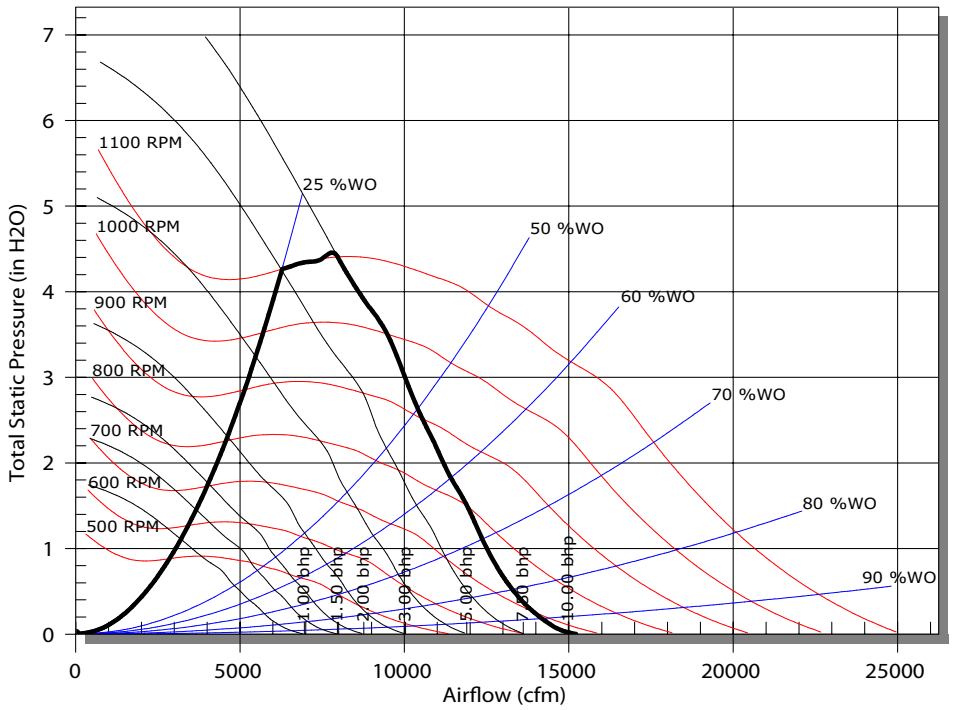



**Figure 56. Size 17 vertical top front 20 x 15 FC fan**

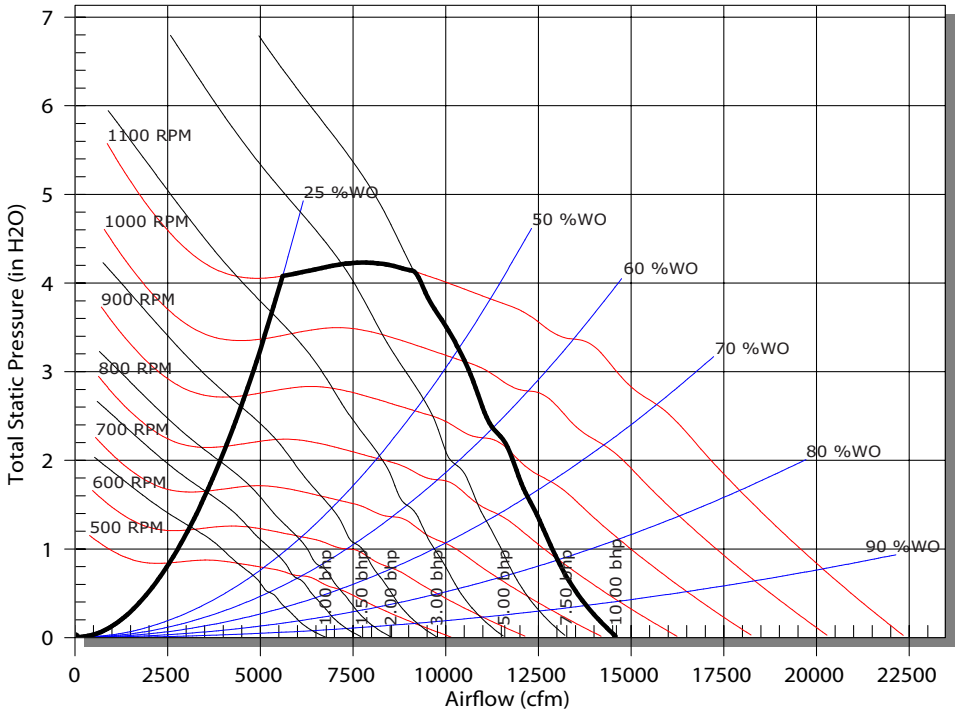


**Figure 57. Size 21 horizontal 20 x 20 FC fan**

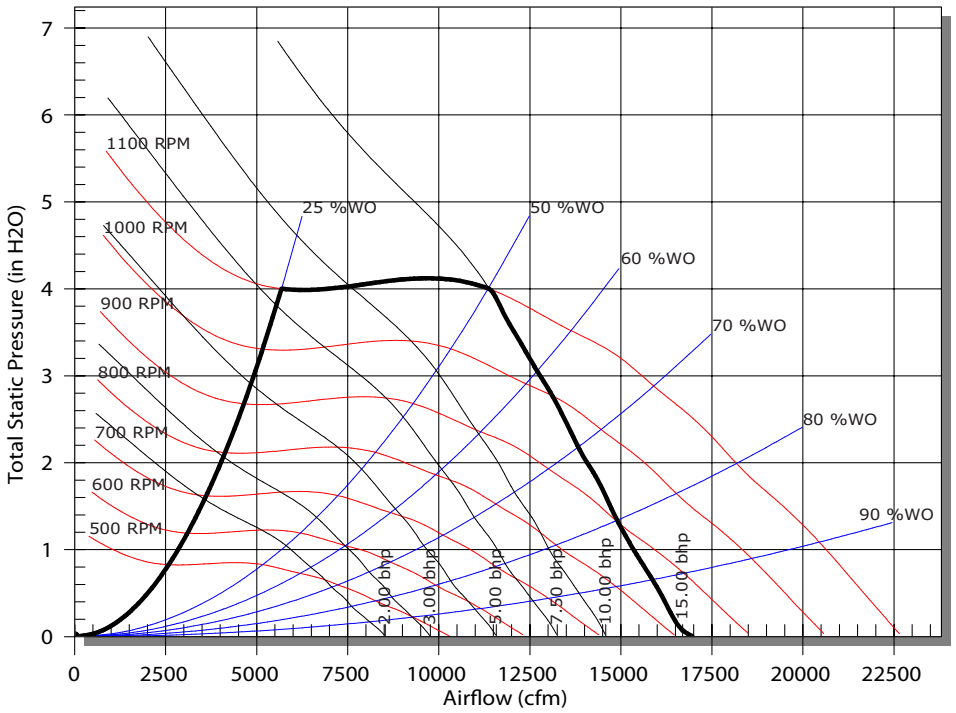



**Figure 58. Size 21 vertical back top 20 x 20 FC fan**

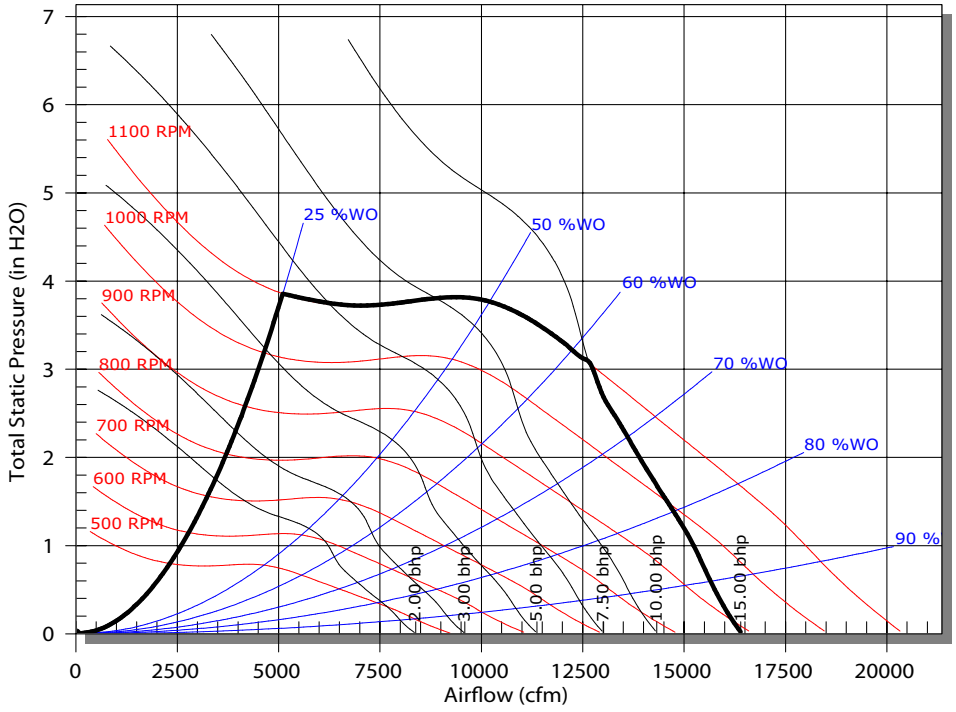


**Figure 59. Size 21 vertical front top 20 x 20 FC fan**

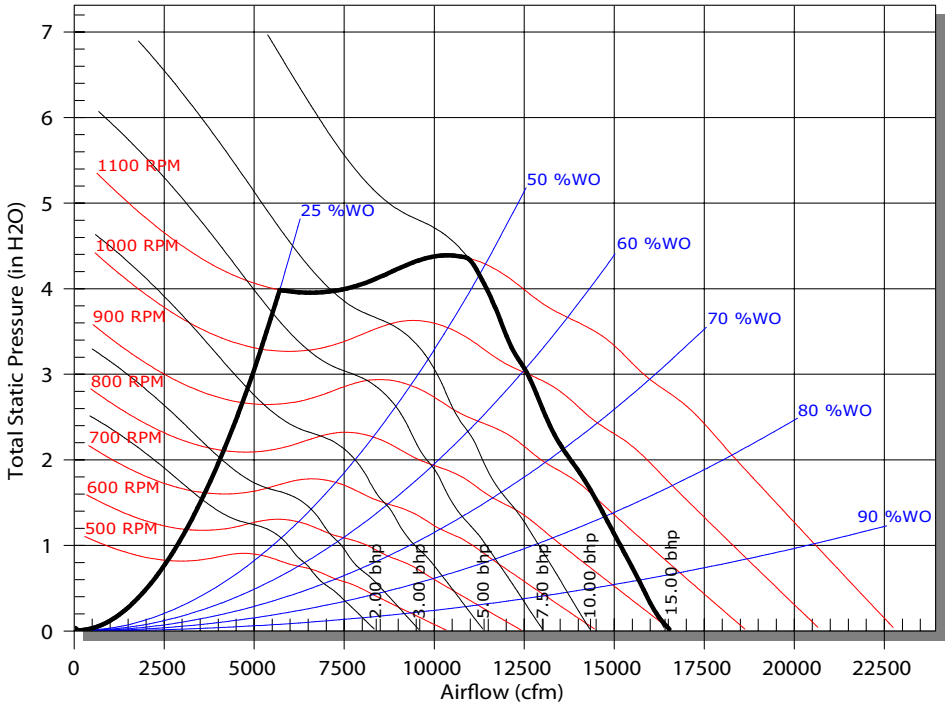



**Figure 60. Size 21 vertical top back 20 x 20 FC fan**

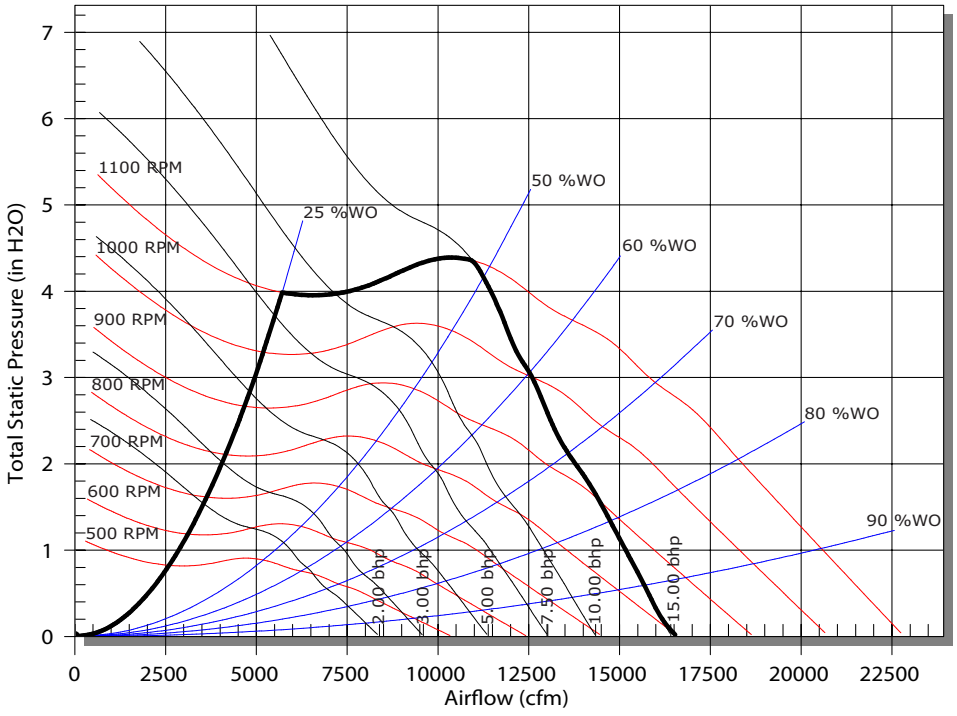


**Figure 61. Size 21 vertical top front 20 x 20 FC fan**

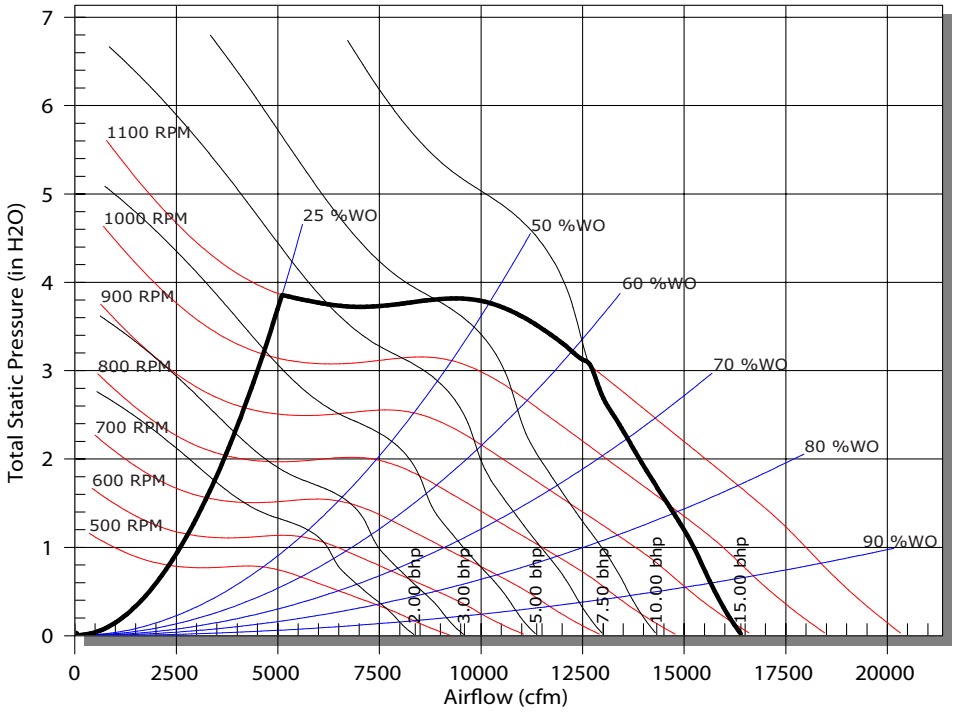



**Figure 62. Size 25 horizontal 20 x 18FC fan**

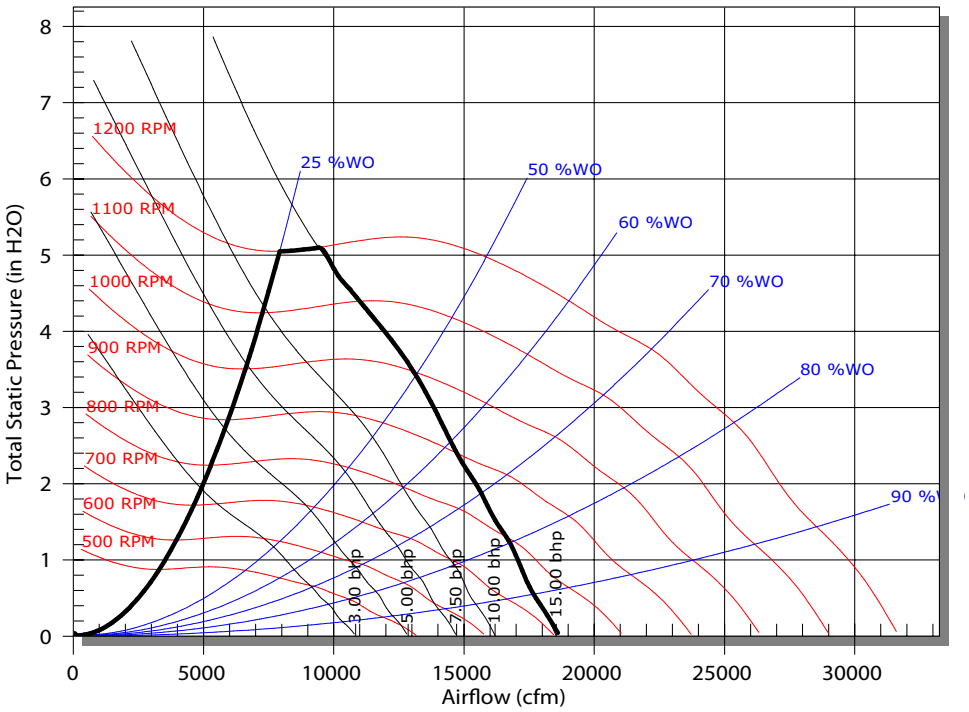
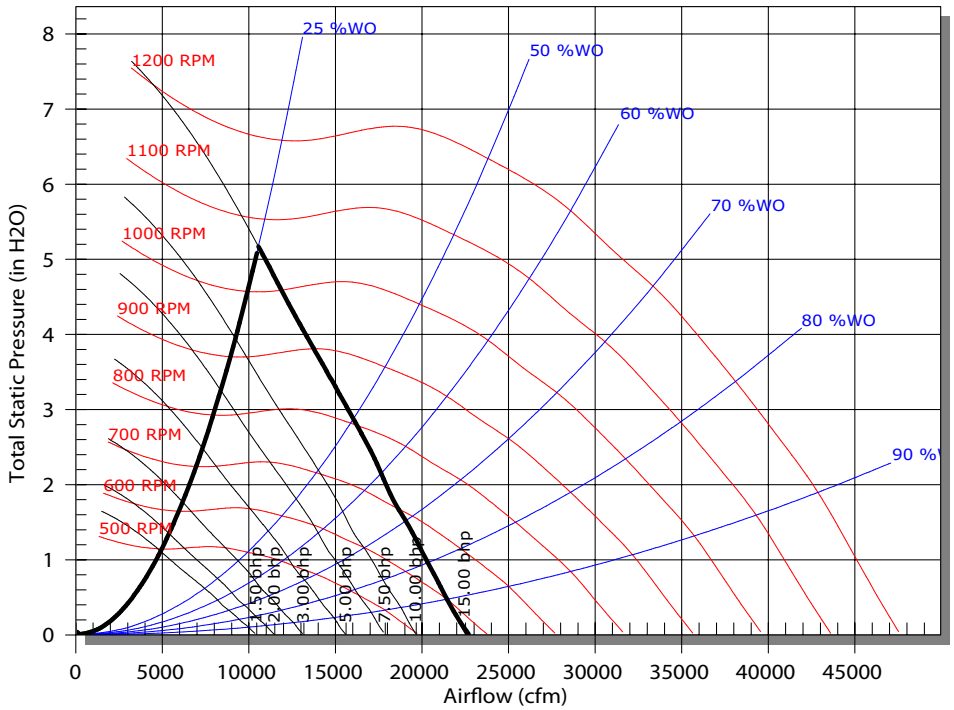


**Figure 63. Size 30 horizontal 22 x 20 FC fan**




# Filter Pressure Drop

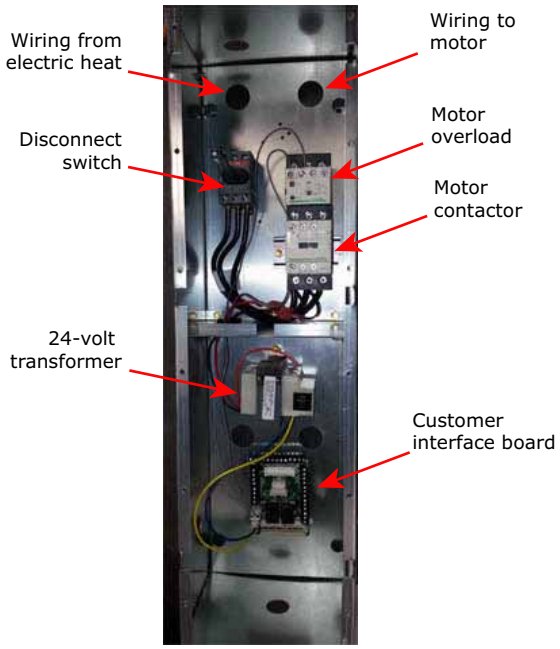
**Table 6. Filter pressure drop**

| Description | Face Velocity (FPM) | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 inch MERV 13 | Clean | 0.06 | 0.10 | 0.13 | 0.17 | 0.21 | 0.25 | 0.30 | 0.35 | 0.40 | 0.45 | 0.50 |
| | Mid-life | 0.53 | 0.55 | 0.57 | 0.58 | 0.60 | 0.63 | 0.65 | 0.67 | 0.70 | 0.72 | 0.75 |
| | Dirty | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 4-inch MERV 11 | Clean | 0.05 | 0.08 | 0.11 | 0.15 | 0.19 | 0.23 | 0.28 | 0.32 | 0.37 | 0.42 | 0.48 |
| | Mid-life | 0.53 | 0.54 | 0.56 | 0.57 | 0.59 | 0.62 | 0.64 | 0.66 | 0.69 | 0.71 | 0.74 |
| | Dirty | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2-inch MERV 13 | Clean | 0.08 | 0.12 | 0.16 | 0.21 | 0.26 | 0.31 | 0.36 | 0.42 | 0.48 | 0.54 | 0.61 |
| | Mid-life | 0.54 | 0.56 | 0.58 | 0.60 | 0.63 | 0.65 | 0.68 | 0.71 | 0.74 | 0.77 | 0.80 |
| | Dirty | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2-inch MERV 8 | Clean | 0.05 | 0.08 | 0.11 | 0.14 | 0.18 | 0.22 | 0.26 | 0.30 | 0.34 | 0.39 | 0.43 |
| | Mid-life | 0.53 | 0.54 | 0.56 | 0.57 | 0.59 | 0.61 | 0.63 | 0.65 | 0.67 | 0.69 | 0.72 |
| | Dirty | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

# Controls

All Performance Climate Changer air handlers are available with a number of control options, from factory-mounted end devices to fully integrated building automation systems.

**Figure 64. Control panel components**




## Controls Options

**Figure 65. Low temperature and condensate overflow detection device**

### Model number digit 30 = 1

Low limit switch, condensate overflow switch, dirty filter switch, and fan status switch.

When the low temperature detection device senses an entering air temperature of 36°F to the hydronic coil, the normally-closed switch opens a corresponding set of binary input terminals. The fan disables, control valves open, and the fresh air damper closes.

The low temperature detection device is an averaging type capillary tube and will reset when it detects an entering air temperature of at least 44°F.

A float switch is factory installed in the drain pan to detect a high condensate water level. When the float switch rises, the normally closed input opens a corresponding set of binary input terminals.

**Figure 66. Field-installed discharge air sensor for use with electric heat.**

## Model number digit 31 = A, B, C, D

Discharge air sensor.

Discharge air sensor is field-installed when using electric heat.

**Figure 67. Damper actuator for mixing section**

## Model Number Digit 31 = C or D

Damper actuator.

This damper actuator uses a 0–10 Vdc signal and is factory-wired and mounted to the damper assembly. It allows zero to 100 percent fresh air. The damper will drive open to an adjustable minimum stop-position whenever the fan is running during occupied mode and will spring-return closed when the fan turns off.

*Trane recommends using the low temperature detection option with fresh air dampers to detect possible freeze conditions.*

**Figure 68. Miscellaneous end devices**

Optional end devices include (clockwise L-R): discharge air sensor (digit 31=A, B, C, D), duct static pressure transducer (digit 32=B), condensate overflow switch (digit 30=1), and fan status switch (digit 30=1).

# Electrical Data

**Table 7. Electric heat kW limits (min/max)**

| Motor | 3 | 6 | 8 | 10 | 12 | 14 | 17 | 21 | 25 | 30 |
|---|---|---|---|---|---|---|---|---|---|---|
| 208 V / 60 Hz / 3 PH | 6/13 | 6/26 | 7/28 | 8/41 | 10/50 | 12/50 | 14/50 | 17/50 | 20/47 | 20/41 |
| 230 V / 60 Hz / 3 PH | 6/13 | 6/26 | 7/32 | 8/41 | 10/53 | 12/59 | 14/59 | 17/59 | 20/56 | 20/50 |
| 460 V / 60 Hz / 3 PH | 6/13 | 6/24 | 7/32 | 8/44 | 10/53 | 12/63 | 14/75 | 17/95 | 20/95 | 20/120 |
| 575 V / 60 Hz / 3 PH | 6/13 | 6/26 | 7/34 | 8/44 | 10/53 | 12/63 | 14/75 | 17/95 | 20/95 | 20/120 |
| Min airflow (CFM) | 1050 | 2100 | 2800 | 3500 | 4200 | 4900 | 5950 | 7350 | 8750 | 10,500 |

**Notes:** Units drawing less than 100 amps are available with or without door interlocking disconnect. Units drawing more than 100 amps are not available with door interlocking disconnect.
Units drawing less than 48 amps are available with or without line fusing. Units drawing greater than 48 amps have line fusing as standard.
Units with electric heat must not be run below the minimum cfm listed above.
Heaters available in the following kW increments: 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 44, 47, 50, 53, 56, 59, 63, 67, 71, 75, 79, 83, 87, 91, 95, 100, 110, 115, 120.

**Table 8. Electric heat voltage ratings**

| Unit Voltage | Heater Voltage |
|---|---|
| 208 | 208 |
| 230 | 240 |
| 460 | 480 |
| 575 | 600 |

### Useful formulas:

kW = (Airflow x Delta T)/K

Delta T = (kW x K)/Airflow

K = 3145 (English)

K = 824.7 (SI)

Heater input current = (kW x 1000)/(Voltage x 1.73)

MCA = Minimum Circuit Ampacity

MOP = Maximum Overcurrent Protection rating or Maximum fuse size

## Fuse Sizes

The standard ampere ratings for fuses and inverse time circuit breakers are listed in Table 9. The use of fuse and inverse time circuit breakers with non-standard ampere ratings shall be permitted provided the rating does not exceed the maximum fuse size defined on the unit nameplate.

**Table 9. Standard fuse sizes (amperes)**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 60 | 70 |
| 80 | 90 | 100 | 110 | 125 | 150 | 175 | 200 | 225 | 250 |
| 300 | 350 | 400 | 450 | 500 | 600 | 700 | 800 | 1000 | |
| 1200 | 1600 | 2000 | 2500 | 3000 | 4000 | 5000 | 6000 | | |

# Transformers

**Table 10. Transformer full load current**

| Description | Primary Voltage | Secondary Voltage | Volt Amps (VA) | Full Load Current |
|---|---|---|---|---|
| 1T1 Transformer (Control) | 575 | 24 | 75 | 0.50 |
| | 460 | 24 | 75 | 0.43 |
| | 230 | 24 | 75 | 0.22 |
| | 200 | 24 | 75 | 0.17 |
| Electric Heater Transformer (SSR) | 208 | 24 | 75 | 0.48 |
| | 240 | 24 | 75 | 0.42 |
| | 480 | 24 | 75 | 0.21 |
| | 600 | 24 | 75 | 0.17 |

**Table 11. Control/end device power rating**

| Devices | Volt Amps (VA) |
|---|---|
| 35 in/lb Actuator | 8 |
| 180 in/lb Actuator | 10 |
| Motor Controller | 7.5 |
| EH Stage 1 - 1 Coil | 8 |
| EH Stage 1 - 2 Coil | 16 |
| EH Stage 1 - 4 Coil | 32 |
| EH Stage 2 - 1 Coil | 8 |
| EH Stage 2 - 2 Coil | 16 |
| EH Stage 4 - 1 Coil | 8 |
| K1 Relay | 0.1 |
| K2 Relay | 0.1 |
| Valve 1 Field Supplied (1) | 10 |
| Valve 2 Field Supplied (1) | 10 |

# Motor Data

**Table 12. 3-phase 1800 RPM motor FLA (amps)**

| HP | 200 V | 230 V | 460 V | 575 V |
|---|---|---|---|---|
| 1/2 | ---- | ---- | ---- | ---- |
| 3/4 | ---- | ---- | ---- | ---- |
| 1 | 3.50 | 3.00 | 1.50 | 1.20 |
| 1.5 | 5.10 | 4.40 | 2.20 | 1.80 |
| 2 | 6.50 | 5.80 | 2.90 | 2.40 |
| 3 | 9.70 | 8.60 | 4.20 | 3.30 |
| 5 | 15.70 | 13.60 | 6.70 | 5.30 |
| 7.5 | 22.40 | 19.40 | 9.40 | 7.60 |
| 10 | 29.50 | 25.20 | 12.50 | 10.00 |
| 15 | 43.40 | 37.80 | 18.50 | 14.80 |

**Table 13. Trane TR150 3-phase VFD inverter input current (amps)**

| 200 V | 230 V | 460 V | 575 V | HP |
|---|---|---|---|---|
| ---- | ---- | ---- | ---- | 1/2 |
| ---- | ---- | ---- | ---- | 3/4 |
| 4.20 | 4.20 | 2.10 | 3.90 | 1 |
| 6.80 | 6.80 | 3.40 | 3.90 | 1.5 |
| 6.80 | 6.80 | 3.40 | 3.90 | 2 |
| 15.20 | 15.20 | 4.80 | 3.90 | 3 |
| 22.00 | 22.00 | 8.20 | 6.10 | 5 |
| 28.00 | 28.00 | 11.00 | 9.00 | 7.5 |
| 42.00 | 42.00 | 14.00 | 11.00 | 10 |
| 59.40 | 59.40 | 21.00 | 18.00 | 15 |

**Table 14. Trane TR 150 dual fan VFD inverter input current (amps)**

| 200 V | 230 V | 460 V | 575 V | HP |
|---|---|---|---|---|
| ---- | ---- | ---- | ---- | 2 |
| 22.00 | 22.00 | 9.66 | 9.00 | 3 |
| 36.80 | 36.80 | 14.00 | 11.00 | 5 |
| 55.20 | 55.20 | 21.00 | 17.48 | 7.5 |
| 59.40 | 59.40 | 27.00 | 22.00 | 10 |
| 88.00 | 88.00 | 40.00 | 34.00 | 15 |

**Notes:** A single VFD will power both fans. Individual motor overload protection will be factory-provided.
Two-fan array units available for unit sizes 21,25,30

# Equations

**Table 15. Equations for electrical load calculations**

| | | |
|---|---|---|
| **Fan motor only units[1]** | FLA = | Fan Motor FLA |
| | MCA = | 1.25 * Fan Motor FLA |
| | MOP/Maximum fuse size = | 2.25 * Fan Motor FLA[2] |
| | Fan Motor FLA = | See Table 12 |
| **Dual fan motor only units[1]** | FLA = | (2 * Fan Motor FLA) |
| | MCA = | 1.25 * Fan Motor FLA + Fan Motor FLA |
| | MOP/Maximum fuse size = | 2.25 * Fan Motor FLA + Fan Motor FLA[2] |
| | Fan Motor FLA = | See Table 12 |
| **Starter units** | FLA = | Fan Motor FLA + 1T1 Transformer |
| | MCA = | 1.25 * Fan Motor FLA + 1T1 Transformer |
| | MOP/Maximum fuse size = | 2.25 * Fan Motor FLA + 1T1 Transformer[2] |
| | Fan Motor FLA = | See Table 12 |
| | 1T1 Transformer = | See Table 10 |
| **VFD units** | FLA = | Inverter input current + 1T1 Transformer |
| | MCA = | 1.25 * Inverter input current + 1T1 Transformer |
| | MOP/Maximum fuse size = | 2.25 * Inverter input current + 1T1 Transformer[2] |
| | Inverter input current = | See Table 13 |
| | 1T1 Transformer = | See Table 10 |
| **VFD dual motor units** | FLA = | Inverter input current + 1T1 Transformer |
| | MCA = | 1.25 * Inverter input current + 1T1 Transformer |
| | MOP/Maximum fuse size = | 2.25 * Inverter input current + 1T1 Transformer[2] |
| | Inverter input current = | See Table 14 |
| | 1T1 Transformer = | See Table 10 |
| **Electric heat staged units with starter** | Electric heat FLA (208 V) = | 1000 * kW / (√3 * 208)[3] |
| | Electric heat FLA (240 V) = | 1000 * kW /(√3 * 240)[3] |
| | Electric heat FLA (480 V) = | 1000 * kW / (√3) * 480)[3] |
| | Electric heat FLA (600 V) = | 1000 * kW / (√3 * 600)[3] |
| | FLA = | Electric heat FLA + Fan Motor FLA + 1T1 Transformer |
| | MCA if electric heat rating is less than 50 kW = | (1.25 * Electric heat FLA) + (1.25 * Fan Motor FLA) + 1T1 Transformer |
| | MCA if electric heat rating is 50 kW or greater = | Electric heat FLA + (1.25 * Fan Motor FLA) + 1T1 Transformer |
| | MOP/Maximum fuse size = | (2.25 * Fan Motor FLA) + Electric heat FLA + 1T1 Transformer[2] |
| | Fan Motor FLA = | See Table 12 |
| | 1T1 Transformer = | See Table 10 |

**Notes:** [1]Individual motor overload protection must be field-provided.
[2]Round down to next smaller fuse size unless rounded value is below MCA, in which case round up to next largest fuse size above MCA. See Table 9 for fuse sizes.
[3]√3 is approximately 1.732.

### Table 15. Equations for electrical load calculations

| | | |
|---|---|---|
| **Electric heat SSR units with starter** | Electric heat FLA (208 V) = | 1000 * kW / (√3 * 208)[3] |
| | Electric heat FLA (240 V) = | 1000 * kW / (√3 * 240)[3] |
| | Electric heat FLA (480 V) = | 1000 * kW / (√3 * 480)[3] |
| | Electric heat FLA (600 V) = | 1000 * kW / (√3 * 600)[3] |
| | FLA = | Electric heat FLA + Electric Heat Transformer + Fan Motor FLA + 1T1 Transformer |
| | MCA if electric heat rating is less than 50 kW = | (1.25 * Electric heat FLA) + Electric Heat Transformer + (1.25 * Fan Motor FLA) + 1T1 Transformer |
| | MCA if electric heat rating is 50 kW or greater = | Electric heat FLA + Electric Heat Transformer + (1.25 * Fan Motor FLA) + 1T1 Transformer |
| | MOP/Maximum fuse size = | (2.25 * Fan Motor FLA) + Electric Heat Transformer + Electric heat FLA + 1T1 Transformer[2] |
| | Fan Motor FLA = | See Table 12 |
| | 1T1 Transformer = | See Table 10 |
| | Electric Heat Transformer = | See Table 10 |
| **Electric heat staged units with VFD** | Electric heat FLA (208 V) = | 1000 * kW / (√3 * 208)[3] |
| | Electric heat FLA (240 V) = | 1000 * kW / (√3 * 240)[3] |
| | Electric heat FLA (480 V) = | 1000 * kW / (√3 * 480)[3] |
| | Electric heat FLA (600 V) = | 1000 * kW / (√3 * 600)[3] |
| | FLA = | Electric heat FLA + Inverter input current + 1T1 Transformer |
| | MCA if electric heat rating is less than 50 kW = | (1.25 * Electric heat FLA) + (1.25 * Inverter input current) + 1T1 Transformer |
| | MCA if electric heat rating is 50 kW or greater = | Electric heat FLA + (1.25 * Inverter input current) + 1T1 Transformer |
| | MOP/Maximum fuse size = | (2.25 * Inverter input current) + Electric heat FLA + 1T1 Transformer[2] |
| | Inverter input current = | See Table 13 and Table 14 |
| | 1T1 Transformer = | See Table 10 |
| **Electric heat SSR units with VFD** | Electric heat FLA (208 V) = | 1000 * kW / (√3 * 208)[3] |
| | Electric heat FLA (240 V) = | 1000 * kW / (√3 * 240)[3] |
| | Electric heat FLA (480 V) = | 1000 * kW / (√3 * 480)[3] |
| | Electric heat FLA (600 V) = | 1000 * kW / (√3 * 600)[3] |
| | FLA = | Electric heat FLA + Electric Heat Transformer + Inverter input current + 1T1 Transformer |
| | MCA if electric heat rating is less than 50 kW = | (1.25 * Electric heat FLA) + Electric Heat Transformer + (1.25 * Inverter input current) + 1T1 Transformer |
| | MCA if electric heat rating is 50 kW or greater = | Electric heat FLA + Electric Heat Transformer + (1.25 * Inverter input current) + 1T1 Transformer |
| | MOP/Maximum fuse size = | (2.25 * Inverter input current) + Electric heat FLA + Electric Heat Transformer + 1T1 Transformer[2] |
| | Inverter input current = | See Table 13 and Table 14 |
| | 1T1 Transformer = | See Table 10 |
| | Electric Heat Transformer = | See Table 10 |

**Notes:** [1]Individual motor overload protection must be field-provided.
[2]Round down to next smaller fuse size unless rounded value is below MCA, in which case round up to next largest fuse size above MCA. See Table 9 for fuse sizes.
[3]√3 is approximately 1.732.

# Dimensions and Weights

## Service Clearances

**Figure 69. Service clearances**

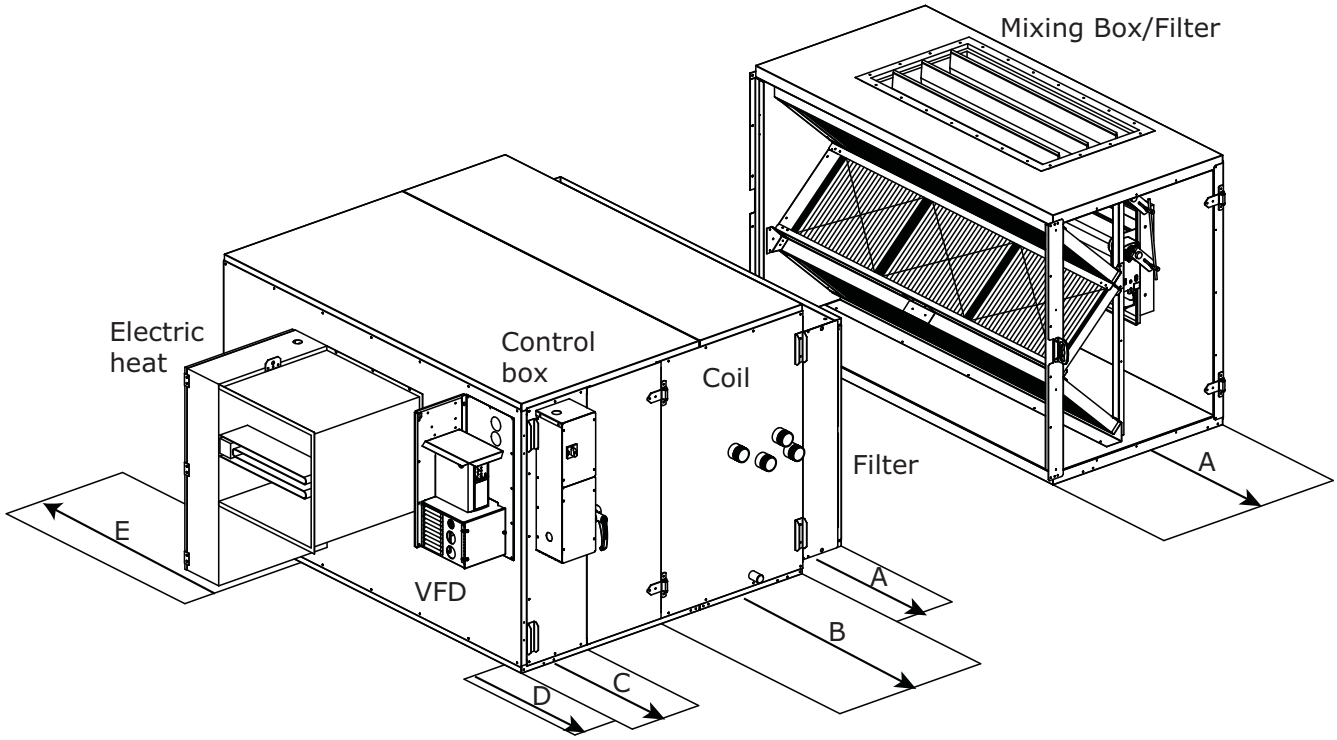



**Table 16. Service clearance dimensions (inches)**

| | | Unit Size | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Letter** | **Component** | **3** | **6** | **8** | **10** | **12** | **14** | **17** | **21** | **25** | **30** |
| A | Filter | 40.00 | 44.00 | 42.00 | 42.00 | 40.00 | 45.00 | 45.0 | 45.0 | 51.0 | 51.0 |
| B | Coil | 49.00 | 62.00 | 66.00 | 78.00 | 86.00 | 86.00 | 94.0 | 94.0 | 96.0 | 109.0 |
| C | Control Box | 56.00 | 56.00 | 56.00 | 56.00 | 56.00 | 56.00 | 56.0 | 56.0 | 56.0 | 56.0 |
| D | VFD | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.0 | 48.0 | 48.0 | 48.0 |
| E | Electric Heat | 45.00 | 40.00 | 39.00 | 35.00 | 31.00 | 32.00 | 27.0 | 30.0 | 28.0 | 23.0 |

**Notes:** At a minimum, the above clearance dimensions are recommended on one side of the unit for regular service and maintenance. Clearance on *both* sides is recommended.
Refer to as-built submittal for locations of items such as filter access doors, coil, piping connections, motor locations, etc.
Sufficient clearance must be provided on all sides of unit for removal of access panels, plug panels, or section-to-section attachment brackets.
Clearance for starters, VFD's, or other high-voltage devices must be provided per NEC requirements.

# Horizontal Units

**Figure 70. Horizontal unit**

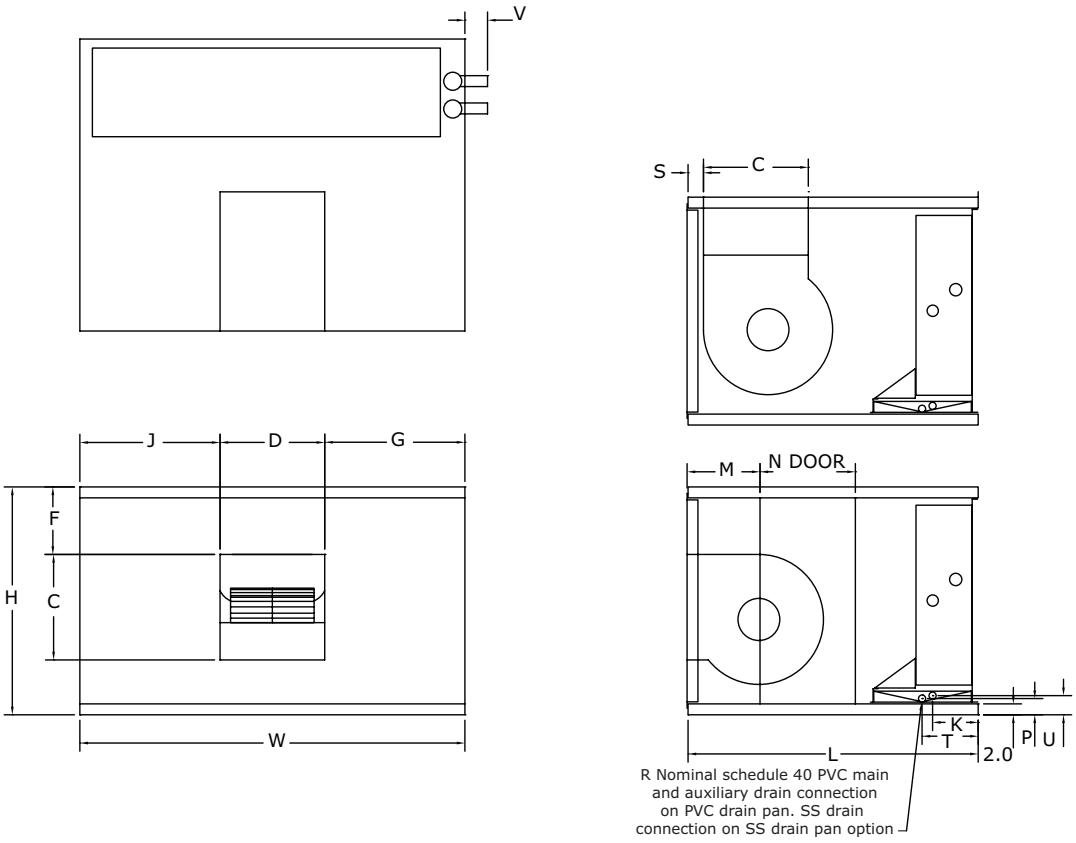



**Table 17. Horizontal unit dimensions (inches) and weight (pounds)**

| Size | Height | Width | Length | Total Weight with FC Fan | Total Weight with DDP Fan |
|---|---|---|---|---|---|
| 3 | 27.50 | 34.00 | 51.90 | 236 | 266 |
| 6 | 32.50 | 47.00 | 54.90 | 328 | 377 |
| 8 | 38.00 | 51.00 | 52.30 | 373 | 414 |
| 10 | 38.00 | 63.00 | 54.70 | 447 | 513 |
| 12 | 41.80 | 71.00 | 54.70 | 505 | 565 |
| 14 | 45.60 | 71.00 | 56.20 | 541 | 595 |
| 17 | 48.10 | 79.00 | 60.20 | 633 | 672 |
| 21 | 54.30 | 79.00 | 60.20 | 684 | 818 |
| 25 | 60.60 | 81.00 | 62.90 | 800 | 935 |
| 30 | 60.60 | 94.00 | 69.60 | 959 | 1068 |

**Note:** Weights include cabinet, fan and average drive.

**Table 18. Horizontal unit dimensions (inches)**

| Size | C | D | F | G | J | K (LH) | K (RH) | M | N | P | S | T | U | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 10.60 | 9.40 | 3.60 | 12.30 | 12.30 | 7.50 | 12.50 | 13.80 | 10.20 | 2.70 | 6.80 | 10.0 | 3.40 | 0.75 |
| 6 | 13.80 | 12.50 | 3.80 | 17.30 | 17.30 | 7.50 | 12.50 | 13.80 | 13.20 | 2.70 | 5.40 | 10.00 | 3.40 | 0.75 |
| 8 | 13.80 | 15.90 | 11.00 | 20.30 | 14.80 | | | 13.80 | 10.60 | 2.80 | 4.00 | 10.00 | | 1.00 |
| 10 | 16.20 | 18.90 | 6.10 | 22.10 | 22.10 | | | 16.10 | 10.60 | 2.80 | 3.35 | 10.00 | | 1.00 |
| 12 | 19.20 | 19.20 | 3.50 | 25.90 | 25.90 | | | 13.80 | 12.60 | 2.80 | 2.81 | 10.00 | | 1.00 |
| 14 | 19.20 | 22.20 | 7.30 | 24.40 | 24.40 | | | 13.80 | 13.10 | 2.80 | 2.88 | 10.00 | | 1.00 |
| 17 | 25.10 | 20.10 | 3.20 | 29.50 | 29.50 | | | 13.80 | 17.10 | 2.80 | 2.63 | 10.00 | | 1.00 |
| 21 | 25.10 | 25.10 | 9.40 | 27.00 | 27.00 | | | 13.80 | 18.10 | 2.80 | 2.63 | 10.00 | | 1.00 |
| 25 | 25.50 | 23.50 | 16.30 | 28.80 | 28.80 | | | 13.80 | 19.20 | 2.80 | 3.43 | 10.00 | | 1.25 |
| 30 | 28.50 | 26.50 | 11.90 | 33.80 | 33.80 | | | 20.40 | 19.20 | 2.80 | 4.54 | 10.00 | | 1.25 |

**Table 19. Dimension V (inches)**

| Size | Hyd 1 row | Hyd 2 row | Hyd 4 row | Hyd 6 row | Hyd 8 row | Header Dist DX F LH/RH 4/6 ROW | | Header Dist DX Face split LH/RH 4 row | | Header Dist DX Face split LH/RH 6 row | | Header Dist DX Intertwined LH/RH 4 row | | Header Dist DX Intertwined LH/RH 6 row | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 3.10 | 2.80 | 2.90 | 2.80 | 2.90 | 2.70 | 7.10 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| 6 | 3.10 | 2.80 | 2.90 | 2.80 | 2.90 | 2.70 | 6.40 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| 8 | 3.10 | 2.80 | 2.90 | 2.80 | 2.90 | 2.70 | 6.40 | 2.70 | 7.10 | 2.70 | 6.40 | 2.90 | 7.10 | 2.90 | 6.40 |
| 10 | 3.10 | 2.80 | 2.90 | 2.90 | 2.90 | 2.90 | 6.80 | 2.70 | 6.40 | 2.70 | 6.40 | 2.90 | 6.40 | 2.90 | 6.40 |
| 12 | 2.50 | 2.10 | 2.10 | 2.10 | 2.10 | n/a | n/a | 1.70 | 5.40 | 1.70 | 5.40 | 1.90 | 5.40 | 1.90 | 5.40 |
| 14 | 2.50 | 2.10 | 2.10 | 2.10 | 2.10 | n/a | n/a | 1.70 | 5.40 | 1.70 | 5.40 | 1.90 | 5.40 | 1.90 | 5.80 |
| 17 | 2.50 | 2.10 | 2.40 | 2.40 | 2.40 | n/a | n/a | 1.70 | 5.40 | 1.70 | 5.40 | 1.90 | 5.40 | 1.90 | 5.80 |
| 21 | 2.50 | 2.10 | 2.40 | 2.40 | 2.40 | n/a | n/a | 1.90 | 5.80 | 1.90 | 5.80 | 1.90 | 6.10 | 1.90 | 5.40 |
| 25 | 2.50 | 2.40 | 2.40 | 2.40 | 2.40 | n/a | n/a | 1.90 | 5.80 | 1.90 | 6.40 | 1.90 | 6.10 | 1.90 | 5.40 |
| 30 | 2.50 | 2.40 | 2.40 | 2.40 | 2.40 | n/a | n/a | 1.90 | 5.80 | 1.90 | 6.40 | 1.90 | 5.40 | 1.90 | 6.40 |

# Vertical Units

**Figure 71. Vertical unit**

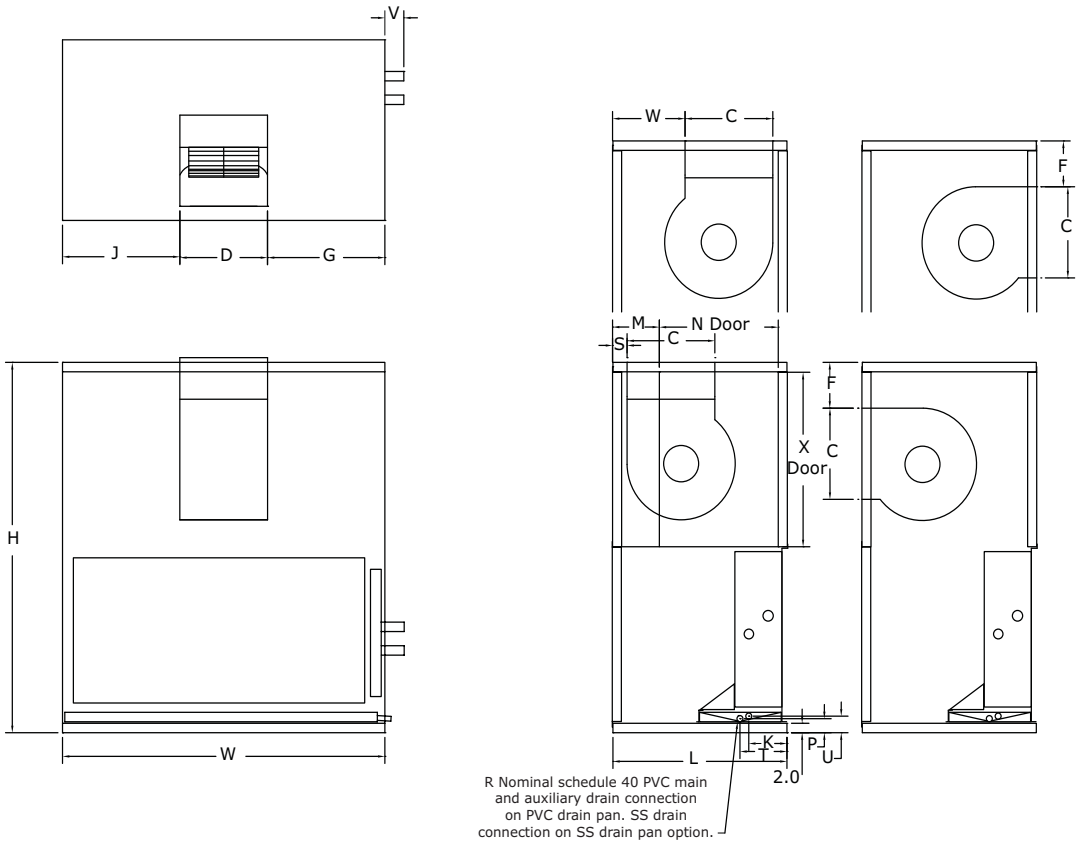



**Table 20. Vertical unit dimensions (inches) and weight (pounds)**

| Size | Height | Width | Length | Total Weight |
|---|---|---|---|---|
| 3 | 51.40 | 34.00 | 34.10 | 233 |
| 6 | 61.30 | 47.00 | 37.10 | 330 |
| 8 | 65.10 | 51.00 | 29.40 | 338 |
| 10 | 69.90 | 63.00 | 32.10 | 411 |
| 12 | 80.10 | 71.00 | 36.10 | 503 |
| 14 | 83.80 | 71.00 | 36.10 | 529 |
| 17 | 92.90 | 79.00 | 42.10 | 651 |
| 21 | 99.20 | 79.00 | 42.10 | 709 |

**Note:** Weights include cabinet, fan and average drive.

**Table 21. Vertical unit dimensions (inches)**

| Size | C | D | F | G | J | K (LH) | K (RH) | M | N | P | S | T | U | R | W | X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 10.60 | 9.40 | 3.00 | 12.30 | 12.30 | 7.50 | 12.50 | 4.00 | 28.10 | 2.72 | 6.80 | 10.00 | 3.37 | 0.75 | 16.67 | 23.60 |
| 6 | 13.80 | 12.50 | 3.00 | 17.25 | 17.25 | 7.50 | 12.50 | 4.00 | 31.10 | 2.72 | 5.40 | 10.00 | 3.37 | 0.75 | 17.87 | 28.50 |
| 8 | 13.80 | 15.90 | 3.00 | 21.24 | 13.70 | | | 4.00 | 23.40 | 2.832 | 4.00 | 10.00 | | 1.00 | 11.64 | 26.80 |
| 10 | 16.20 | 18.90 | 3.00 | 22.05 | 22.05 | | | 4.00 | 26.10 | 2.832 | 3.35 | 10.00 | | 1.00 | 12.52 | 31.60 |
| 12 | 19.20 | 19.20 | 3.00 | 25.90 | 25.90 | | | 4.00 | 30.10 | 2.832 | 2.81 | 10.00 | | 1.00 | 14.06 | 38.00 |
| 14 | 19.20 | 22.20 | 3.00 | 24.40 | 24.40 | | | 4.00 | 30.10 | 2.832 | 2.88 | 10.00 | | 1.00 | 13.99 | 38.00 |
| 17 | 25.10 | 20.10 | 3.00 | 29.45 | 29.45 | | | 4.00 | 36.10 | 2.832 | 2.63 | 10.00 | | 1.00 | 14.34 | 44.60 |
| 21 | 25.10 | 25.10 | 3.00 | 26.95 | 26.95 | | | 4.00 | 36.10 | 2.832 | 2.63 | 10.00 | | 1.00 | 14.34 | 44.60 |

**Table 22. Dimension V (inches)**

| Size | Hyd 1 row | Hyd 2 row | Hyd 4 row | Hyd 6 row | Hyd 8 row | Header DX F LH/RH 4/6 ROW | Dist DX F LH/RH 4/6 ROW | Header DX Face split LH/RH 4 row | Dist DX Face split LH/RH 4 row | Header DX Face split LH/RH 6 row | Dist DX Face split LH/RH 6 row | Header DX Intertwined LH/RH 4 row | Dist DX Intertwined LH/RH 4 row | Header DX Intertwined LH/RH 6 row | Dist DX Intertwined LH/RH 6 row |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 3.10 | 2.80 | 2.90 | 2.80 | 2.90 | 2.70 | 7.10 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| 6 | 3.10 | 2.80 | 2.90 | 2.80 | 2.90 | 2.70 | 6.40 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| 8 | 3.10 | 2.80 | 2.90 | 2.80 | 2.90 | 2.70 | 6.40 | 2.70 | 7.10 | 2.70 | 6.40 | 2.90 | 7.10 | 2.90 | 6.40 |
| 10 | 3.10 | 2.80 | 2.90 | 2.90 | 2.90 | 2.90 | 6.80 | 2.70 | 6.40 | 2.70 | 6.40 | 2.90 | 6.40 | 2.90 | 6.40 |
| 12 | 2.50 | 2.10 | 2.10 | 2.10 | 2.10 | n/a | n/a | 1.70 | 5.40 | 1.70 | 5.40 | 1.90 | 5.40 | 1.90 | 5.40 |
| 14 | 2.50 | 2.10 | 2.10 | 2.10 | 2.10 | n/a | n/a | 1.70 | 5.40 | 1.70 | 5.40 | 1.90 | 5.40 | 1.90 | 5.80 |
| 17 | 2.50 | 2.10 | 2.40 | 2.40 | 2.40 | n/a | n/a | 1.70 | 5.40 | 1.70 | 5.40 | 1.90 | 5.40 | 1.90 | 5.80 |
| 21 | 2.50 | 2.10 | 2.40 | 2.40 | 2.40 | n/a | n/a | 1.90 | 5.80 | 1.90 | 5.80 | 1.90 | 6.10 | 1.90 | 5.40 |
| 25 | 2.50 | 2.40 | 2.40 | 2.40 | 2.40 | n/a | n/a | 1.90 | 5.80 | 1.90 | 6.40 | 1.90 | 6.10 | 1.90 | 5.40 |
| 30 | 2.50 | 2.40 | 2.40 | 2.40 | 2.40 | n/a | n/a | 1.90 | 5.80 | 1.90 | 6.40 | 1.90 | 5.40 | 1.90 | 6.40 |

# Electric Heat

**Figure 72. Electric heat**

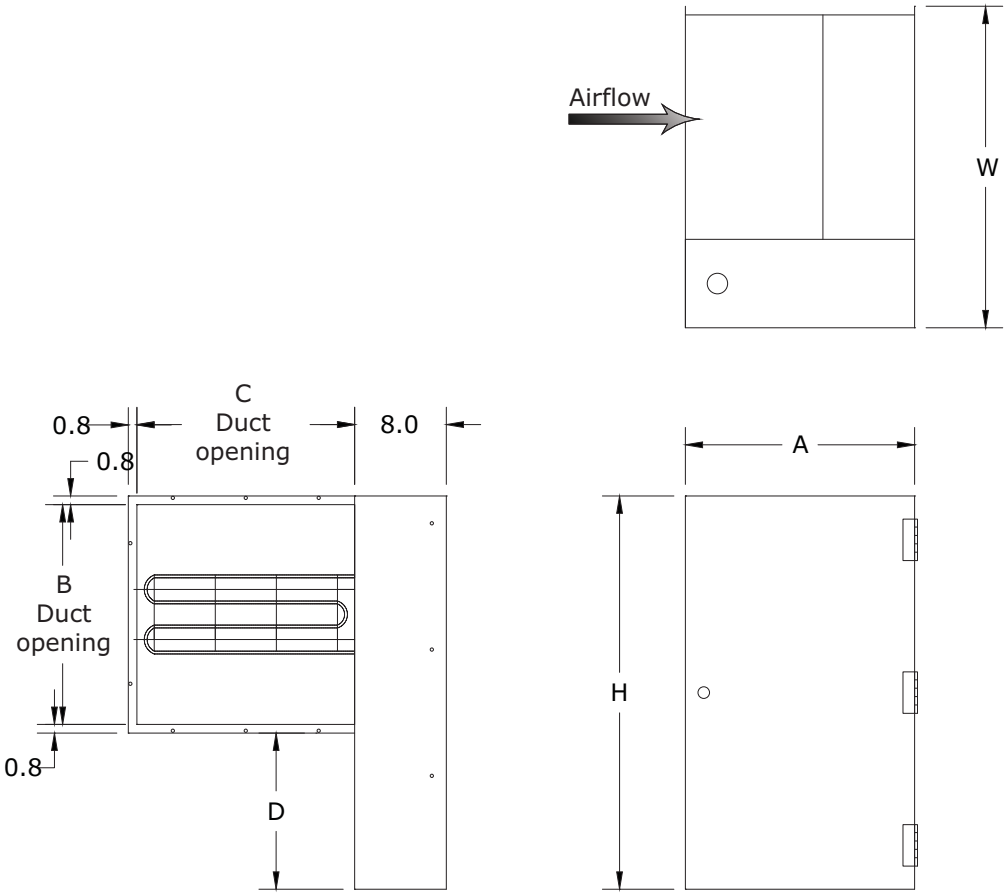



**Table 23. Electric heat dimensions (inches) and weight (pounds)**

| Unit size | H | W | A | B | C | D | Weight |
|---|---|---|---|---|---|---|---|
| 3 | 24.00 | 18.00 | 13.60 | 10.60 | 10.10 | 11.90 | 34 |
| 6 | 24.00 | 21.00 | 17.60 | 13.80 | 13.10 | 8.70 | 38 |
| 8 | 24.70 | 24.50 | 17.60 | 13.60 | 15.80 | 9.60 | 44 |
| 10 | 29.00 | 27.50 | 21.60 | 16.00 | 18.80 | 11.50 | 62 |
| 12 | 34.00 | 27.80 | 21.60 | 19.00 | 19.00 | 13.50 | 66 |
| 14 | 34.00 | 30.80 | 21.60 | 19.00 | 22.00 | 13.50 | 69 |
| 17 | 34.00 | 28.60 | 21.60 | 24.90 | 19.90 | 7.60 | 73 |
| 21 | 34.00 | 33.60 | 21.60 | 24.90 | 24.90 | 7.60 | 77 |
| 25 | 34.00 | 32.00 | 21.60 | 25.30 | 23.30 | 7.20 | 79 |
| 30 | 34.00 | 35.10 | 21.60 | 28.30 | 26.40 | 4.20 | 82 |

# Control Box

**Figure 73. Control box**

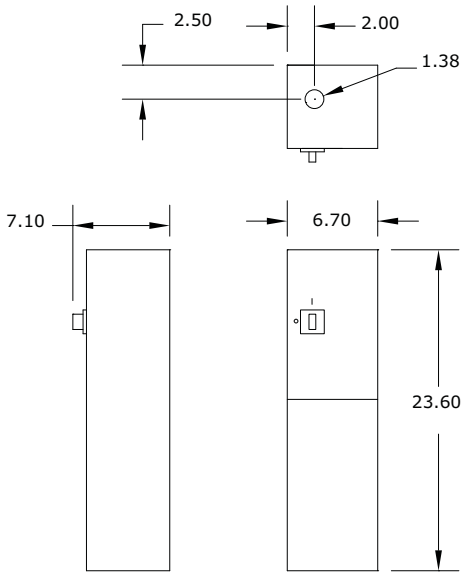


**Figure 74. Control box locations**

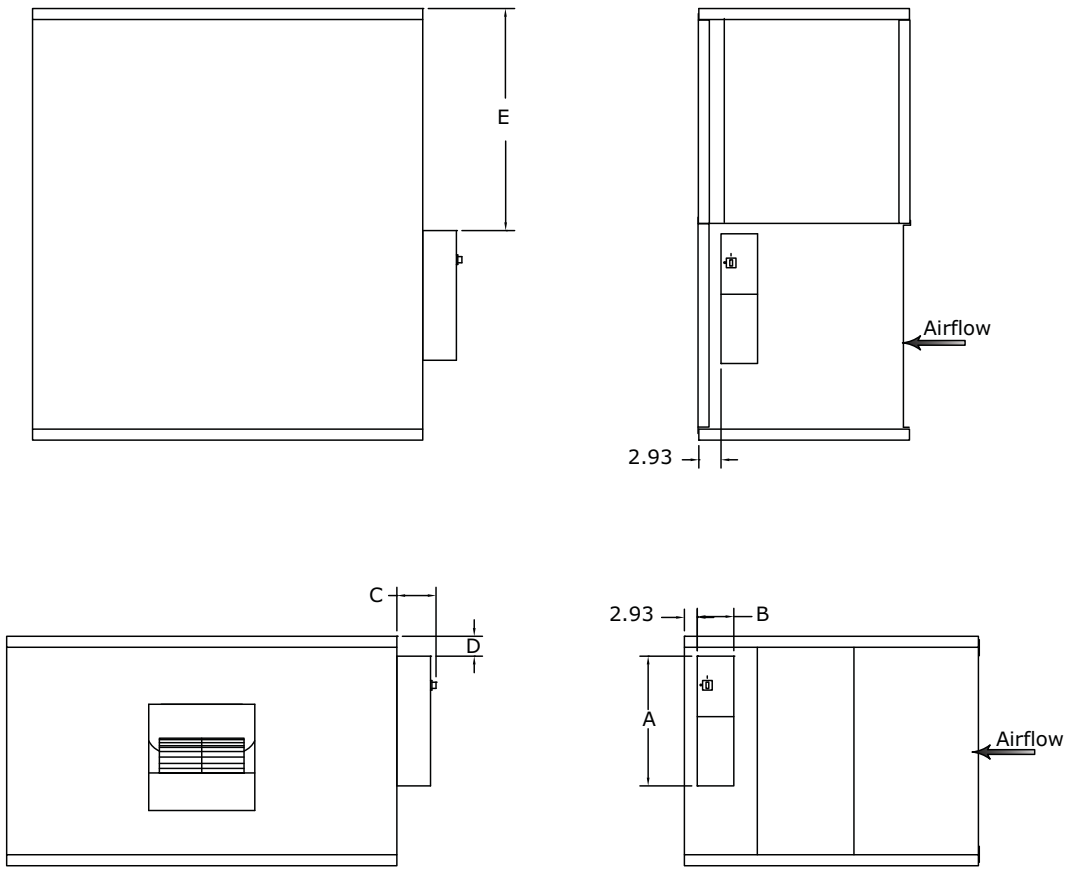



**Table 24. Control box location dimensions (inches) and weight (pounds)**

| Size | A | B | C | D | E | Weight |
|---|---|---|---|---|---|---|
| 3 | 23.60 | 6.70 | 7.10 | 1.90 | 29.34 | 15 |
| 6 | 23.60 | 6.70 | 7.10 | 1.90 | 34.21 | 15 |
| 8 | 23.60 | 6.70 | 7.10 | 1.90 | 32.46 | 15 |
| 10 | 23.60 | 6.70 | 7.10 | 1.90 | 37.34 | 15 |
| 12 | 23.60 | 6.70 | 7.10 | 1.90 | 43.71 | 15 |
| 14 | 23.60 | 6.70 | 7.10 | 1.90 | 43.71 | 15 |
| 17 | 23.60 | 6.70 | 7.10 | 1.90 | 50.34 | 15 |
| 21 | 23.60 | 6.70 | 7.10 | 1.90 | 50.34 | 15 |
| 25 | 23.60 | 6.70 | 7.10 | 1.90 | n/a | 15 |
| 30 | 23.60 | 6.70 | 7.10 | 1.90 | n/a | 15 |

# VFD

**Figure 75. VFD location**

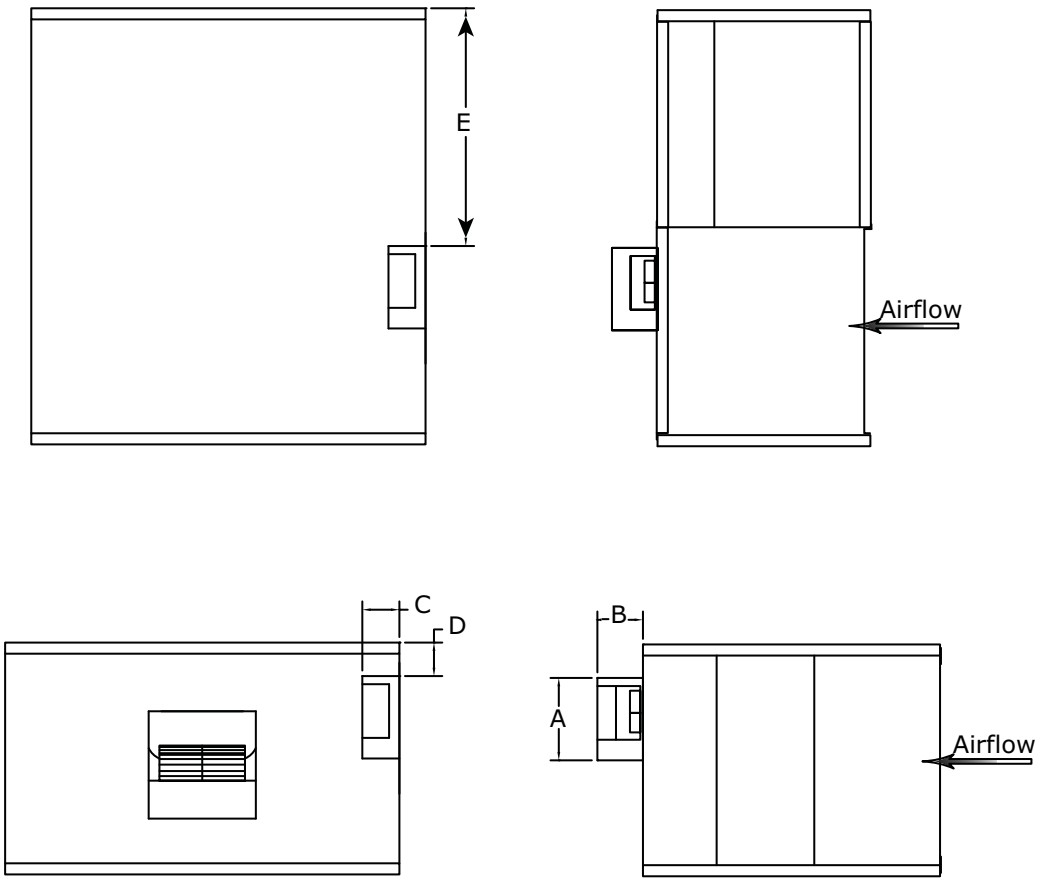



**Table 25. VFD dimensions**

| Size | A | B | C | D | E |
|---|---|---|---|---|---|
| 3 | 23.00 | 10.00 | 11.60 | 2.10 | 25.94 |
| 6 | 23.00 | 10.00 | 11.60 | 2.10 | 30.81 |
| 8 | 23.00 | 10.00 | 11.60 | 2.10 | 29.06 |
| 10 | 23.00 | 10.00 | 11.60 | 2.10 | 33.94 |
| 12 | 23.00 | 10.00 | 11.60 | 2.10 | 40.31 |
| 14 | 23.00 | 10.00 | 11.60 | 2.10 | 40.31 |
| 17 | 23.00 | 10.00 | 11.60 | 2.10 | 46.94 |
| 21 | 43.00 | 15.00 | 11.60 | 2.10 | 46.94 |
| 25 | 43.00 | 15.00 | 11.60 | 2.10 | n/a |
| 30 | 43.00 | 15.00 | 11.60 | 2.10 | n/a |

**Note:** See VFD weights in Table 25, p. 67.

# Coils

## Hydronic Coils

**Figure 76. Hydronic Coils**

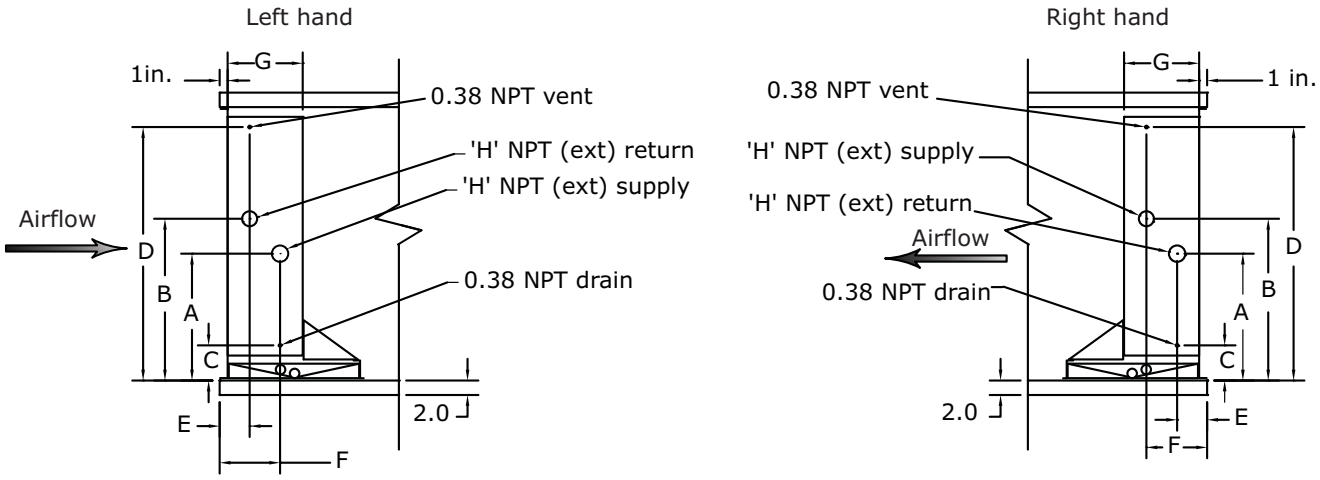


**Table 26. Hydronic (water) coil dimensions**

| | | | Left hand Connections | | | | Right Hand Connections | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Size | Coil Height | A | B | C | D | A | B | C | D | E | F | G | H |
| 1-row coils | 3 | 19.63 | 10.81 | 13.94 | 4.25 | 20.50 | 10.19 | 13.31 | 3.63 | 19.88 | 2.69 | 4.63 | 5.38 | 1.50 |
| | 6 | 24.63 | 13.31 | 16.44 | 4.25 | 25.50 | 12.69 | 15.81 | 3.63 | 24.88 | 2.69 | 4.63 | 5.38 | 1.50 |
| | 8,10 | 29.63 | 16.31 | 19.44 | 4.75 | 31.00 | 15.69 | 18.81 | 4.13 | 30.38 | 2.69 | 4.63 | 5.38 | 1.50 |
| | 12 | 32.13 | 17.56 | 20.69 | 4.75 | 33.50 | 16.94 | 20.06 | 4.13 | 32.88 | 2.44 | 4.88 | 5.38 | 2.00 |
| | 14,17 | 37.13 | 20.06 | 23.19 | 4.75 | 38.50 | 19.44 | 22.56 | 4.13 | 37.88 | 2.44 | 4.88 | 5.38 | 2.00 |
| | 21 | 45.80 | 23.81 | 26.94 | 4.75 | 46.00 | 24.44 | 27.56 | 5.38 | 46.63 | 2.44 | 4.88 | 5.38 | 2.00 |
| | 25,30 | 52.13 | 27.56 | 30.69 | 4.75 | 53.50 | 26.94 | 30.06 | 4.13 | 53.50 | 3.00 | 5.50 | 6.50 | 2.00 |
| 2-row coils | 3 | 19.63 | 9.88 | 13.00 | 3.63 | 19.25 | 11.13 | 14.25 | 4.88 | 20.50 | 2.81 | 4.56 | 5.38 | 1.50 |
| | 6 | 24.63 | 13.00 | 16.13 | 4.25 | 24.88 | 13.00 | 16.13 | 4.25 | 24.88 | 2.81 | 4.56 | 5.38 | 1.50 |
| | 8,10 | 29.63 | 16.00 | 19.13 | 4.75 | 30.38 | 16.00 | 19.13 | 4.75 | 30.38 | 2.81 | 4.56 | 5.38 | 1.50 |
| | 12 | 32.13 | 17.25 | 20.38 | 4.75 | 32.88 | 17.25 | 20.38 | 4.75 | 32.88 | 2.56 | 4.81 | 5.38 | 2.00 |
| | 14,17 | 37.13 | 19.75 | 22.88 | 4.75 | 37.88 | 19.75 | 23.00 | 4.75 | 37.88 | 2.56 | 4.81 | 5.38 | 2.00 |
| | 21 | 45.80 | 24.13 | 27.25 | 4.75 | 46.63 | 24.13 | 27.25 | 4.75 | 46.63 | 2.56 | 4.81 | 5.38 | 2.00 |
| | 25,30 | 52.13 | 27.25 | 30.38 | 4.75 | 52.88 | 27.25 | 30.38 | 4.75 | 52.88 | 2.88 | 5.63 | 6.50 | 2.50 |
| 4-row coils | 3 | 19.63 | 9.88 | 13.00 | 3.63 | 19.25 | 11.13 | 14.25 | 4.88 | 20.50 | 4.94 | 8.19 | 9.00 | 1.50 |
| | 6 | 24.63 | 13.00 | 16.13 | 4.25 | 24.88 | 13.00 | 16.13 | 4.25 | 24.88 | 4.94 | 8.19 | 9.00 | 1.50 |
| | 8,10 | 29.63 | 16.00 | 19.13 | 4.75 | 30.38 | 16.00 | 19.13 | 4.75 | 30.38 | 4.94 | 8.19 | 9.00 | 1.50 |
| | 12 | 32.13 | 17.25 | 20.38 | 4.75 | 32.88 | 17.25 | 20.38 | 4.75 | 32.88 | 4.94 | 8.19 | 9.00 | 2.00 |
| | 14,17 | 37.13 | 19.75 | 22.88 | 4.75 | 37.88 | 19.75 | 22.88 | 4.75 | 37.88 | 4.94 | 8.19 | 9.00 | 2.00 |
| | 21 | 45.80 | 24.13 | 27.25 | 4.75 | 46.63 | 24.13 | 27.25 | 4.75 | 46.63 | 4.94 | 8.19 | 9.00 | 2.50 |
| | 25,30 | 52.13 | 27.25 | 30.38 | 4.75 | 52.88 | 27.25 | 30.38 | 4.75 | 52.88 | 4.94 | 8.19 | 9.00 | 2.50 |
| 6-row coils | 3 | 19.63 | 9.88 | 13.00 | 3.63 | 19.25 | 11.13 | 14.25 | 4.88 | 20.50 | 2.81 | 8.19 | 9.00 | 1.50 |
| | 6 | 24.63 | 13.00 | 16.13 | 4.25 | 24.88 | 13.00 | 16.13 | 4.25 | 24.88 | 2.81 | 8.19 | 9.00 | 1.50 |
| | 8,10 | 29.63 | 16.00 | 19.13 | 4.75 | 30.38 | 16.00 | 19.13 | 4.75 | 30.38 | 2.81 | 8.19 | 9.00 | 1.50 |
| | 12 | 32.13 | 17.25 | 20.38 | 4.75 | 32.88 | 17.25 | 20.38 | 4.75 | 32.88 | 2.81 | 8.19 | 9.00 | 2.00 |
| | 14,17 | 37.13 | 19.75 | 22.88 | 4.75 | 37.88 | 19.75 | 22.88 | 4.75 | 37.88 | 2.81 | 8.19 | 9.00 | 2.00 |
| | 21 | 45.80 | 24.13 | 27.25 | 4.75 | 46.63 | 24.13 | 27.25 | 4.75 | 46.63 | 2.81 | 8.19 | 9.00 | 2.50 |
| | 25,30 | 52.13 | 27.25 | 30.38 | 4.75 | 52.88 | 27.25 | 30.38 | 4.75 | 52.88 | 2.81 | 8.19 | 9.00 | 2.50 |
| 8-row coils | 3 | 19.63 | 9.88 | 13.00 | 3.63 | 19.25 | 11.13 | 14.25 | 4.88 | 20.50 | 2.81 | 10.38 | 11.19 | 1.50 |
| | 6 | 24.63 | 13.00 | 16.13 | 4.25 | 24.88 | 13.00 | 16.13 | 4.25 | 24.88 | 2.81 | 10.38 | 11.19 | 1.50 |
| | 8,10 | 29.63 | 16.00 | 19.13 | 4.75 | 30.38 | 16.00 | 19.13 | 4.75 | 30.38 | 2.81 | 10.38 | 11.19 | 1.50 |
| | 12 | 32.13 | 17.25 | 20.38 | 4.75 | 32.88 | 17.25 | 20.38 | 4.75 | 32.88 | 2.81 | 10.38 | 11.19 | 2.00 |
| | 14,17 | 37.13 | 19.75 | 22.88 | 4.75 | 37.88 | 19.75 | 22.88 | 4.75 | 37.88 | 2.81 | 10.38 | 11.19 | 2.00 |
| | 21 | 45.80 | 24.13 | 27.25 | 4.75 | 46.63 | 24.13 | 27.25 | 4.75 | 46.63 | 2.81 | 10.38 | 11.19 | 2.50 |
| | 25,30 | 52.13 | 27.25 | 30.38 | 4.75 | 52.88 | 27.25 | 30.38 | 4.75 | 52.88 | 2.81 | 10.38 | 11.19 | 2.50 |

## Steam Coils

**Figure 77. Steam coils**

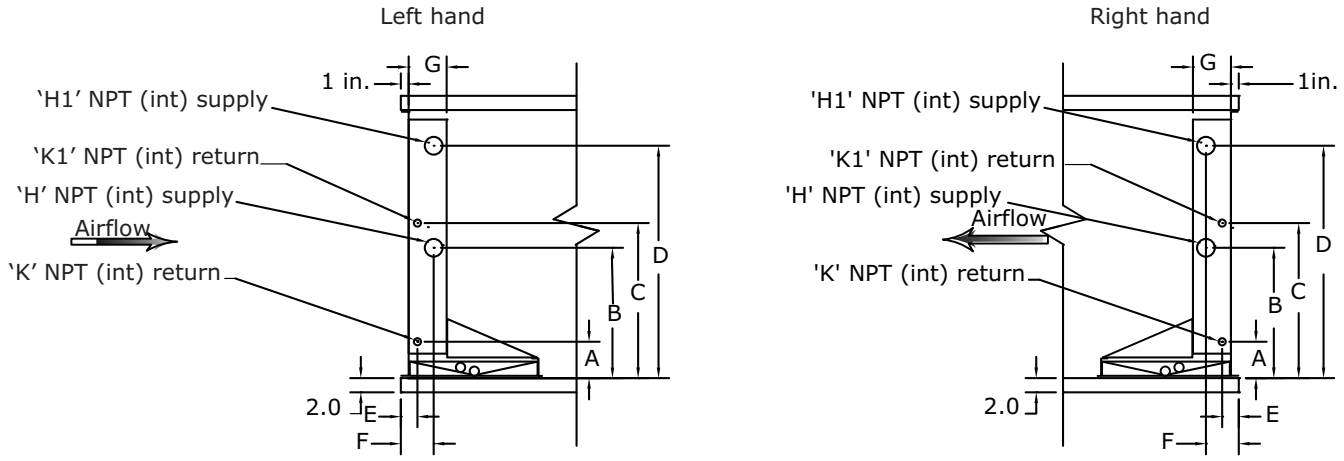
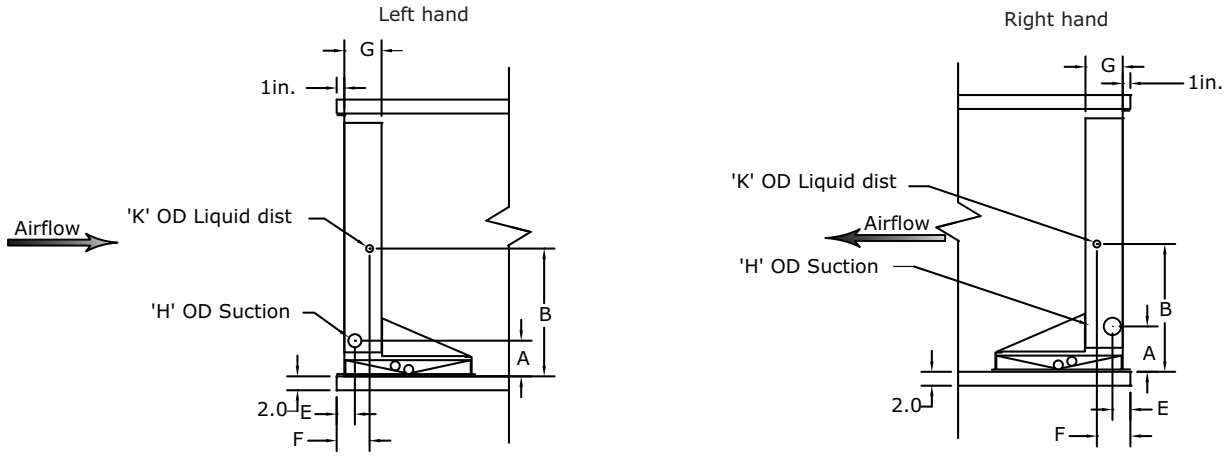



**Table 27. Steam coil dimensions**

| Size | Coil height | A | B (LH) | B (RH) | C | D (LH) | D (RH) | E | F | G | K | K1 | H | H1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 13.50 | 6.94 | 13.38 | 10.38 | | | | 2.38 | 3.81 | 5.25 | 1.00 | | 1.50 | |
| 6 | 19.50 | 6.38 | 15.81 | 12.81 | | | | 2.38 | 3.56 | 5.25 | 1.00 | | 2.00 | |
| 8 | 25.50 | 6.06 | 18.81 | 15.81 | | | | 2.31 | 3.56 | 5.25 | 1.25 | | 2.50 | |
| 10 | 25.50 | 6.00 | 18.75 | 15.75 | | | | 2.31 | 3.56 | 5.25 | 1.25 | | 2.50 | |
| 12 | 25.50 | 7.19 | 19.94 | 16.94 | | | | 2.31 | 3.56 | 5.25 | 1.25 | | 2.50 | |
| 14 | 34.50 | 5.19 | 20.94 | 20.94 | | | | 2.31 | 3.56 | 5.25 | 1.25 | | 3.00 | |
| 17 | 34.50 | 5.19 | 20.94 | 20.94 | | | | 2.31 | 3.56 | 5.25 | 1.25 | | 3.00 | |
| 21 | 19.50 + 19.50 | 7.63 | 17.06 | 14.06 | 27.13 | 36.56 | 33.56 | 2.38 | 3.56 | 5.25 | 1.00 | 1.00 | 2.00 | 2.00 |
| 25 | 13.50 + 34.50 | 5.88 | 21.63 | 21.63 | 40.69 | 47.13 | 44.13 | 2.31 | 3.56 | 5.25 | 1.25 | 1.00 | 3.00 | 1.50 |
| 30 | 13.50 + 34.50 | 5.81 | 21.56 | 21.56 | 40.63 | 47.06 | 44.06 | 2.31 | 3.56 | 5.25 | 1.25 | 1.00 | 3.00 | 1.50 |

## DX Coils

**Figure 78. DX single circuit coils size 3-10**




**DX single circuit coil dimensions**

| Coil Rows | Size | Coil Height | A | B | E | F | H | K | G |
|---|---|---|---|---|---|---|---|---|---|
| 4-row coils | 3 | 19.63 | 4.69 | 12.44 | 4.94 | 8.13 | 1.38 | 0.63 | 9.00 |
| | 6 | 24.63 | 4.69 | 19.75 | 4.94 | 8.13 | 1.38 | 0.88 | 9.00 |
| | 8 | 29.63 | 5.19 | 21.44 | 4.94 | 8.13 | 1.38 | 0.88 | 9.00 |
| | 10 | 29.63 | 5.25 | 20.94 | 4.94 | 8.13 | 1.63 | 1.13 | 9.00 |
| 6-row coils | 3 | 19.63 | 4.69 | 12.44 | 2.81 | 6.00 | 1.38 | 0.63 | 9.00 |
| | 6 | 24.63 | 4.69 | 19.75 | 2.81 | 6.00 | 1.38 | 0.88 | 9.00 |
| | 8 | 29.63 | 5.19 | 21.44 | 2.81 | 6.00 | 1.38 | 0.88 | 9.00 |
| | 10 | 29.63 | 5.25 | 20.94 | 2.81 | 6.00 | 1.63 | 1.13 | 9.00 |

**Figure 79. DX horizontal face split coils**

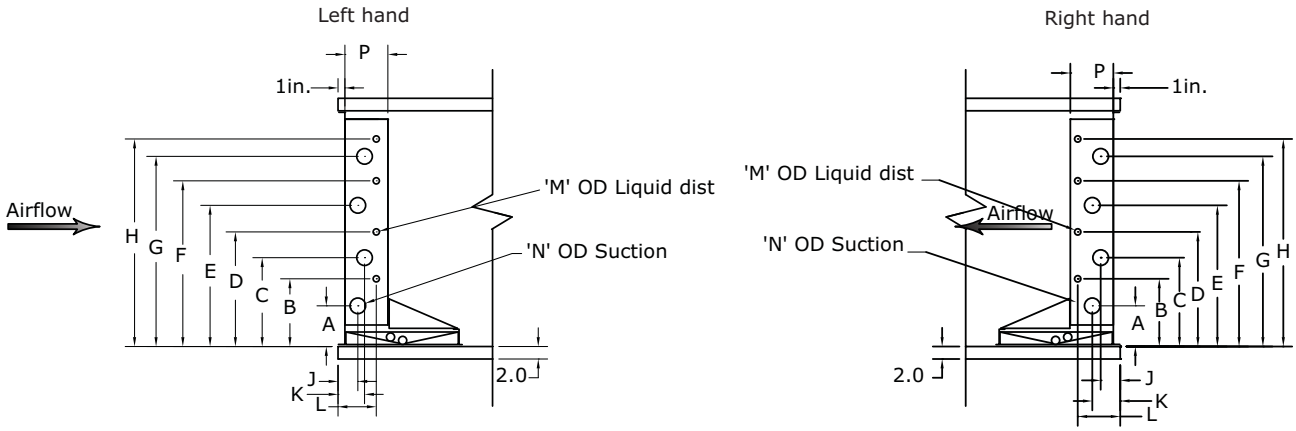


**Table 28. DX horizontal face split coil dimensions**

| Coil Rows | Size | Coil Height | Left hand | | | Right Hand | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | J | K | L | J | K | L | A | C | E | G |
| 4-row | 8 | 29.63 | 4.94 | | 6.13 | 4.94 | | 8.13 | 5.19 | | 20.19 | |
| | 10 | 29.63 | 4.94 | | 6.13 | 4.94 | | 8.13 | 5.19 | | 17.69 | |
| | 12 | 32.13 | 4.94 | | 8.13 | 4.94 | | 8.13 | 5.13 | | 17.63 | |
| | 14 | 37.13 | 4.94 | | 8.13 | 4.94 | | 8.13 | 5.19 | | 22.69 | |
| | 17 | 37.13 | 4.94 | | 8.13 | 4.94 | | 8.13 | 5.19 | | 22.69 | |
| | 21 | 45.88 | 4.94 | | 8.13 | 5.00 | | 8.13 | 5.25 | | 27.75 | |
| | 25 | 52.13 | 4.94 | | 6.25 | 4.94 | | 8.19 | 5.25 | | 27.75 | |
| | 30 | 52.13 | 4.13 | 5.81 | 7.38 | 5.81 | 4.13 | 9.06 | 5.25 | 16.50 | 29.00 | 41.50 |
| 6-row | 8 | 29.63 | 2.81 | | 3.88 | 2.81 | | 6.00 | 5.19 | | 20.19 | |
| | 10 | 29.63 | 2.81 | | 3.88 | 2.81 | | 6.00 | 5.19 | | 17.69 | |
| | 12 | 32.13 | 2.81 | | 6.00 | 2.81 | | 6.00 | 5.13 | | 17.63 | |
| | 14 | 37.13 | 2.81 | | 6.00 | 2.81 | | 6.00 | 5.19 | | 22.69 | |
| | 17 | 37.13 | 2.81 | | 6.00 | 2.81 | | 6.00 | 5.19 | | 22.69 | |
| | 21 | 45.88 | 2.81 | | 6.00 | 2.81 | | 6.00 | 5.25 | | 27.75 | |
| | 25 | 52.13 | 2.81 | | 4.13 | 2.81 | | 6.00 | 5.25 | | 27.75 | |
| | 30 | 52.13 | 1.94 | 3.63 | 7.38 | 3.63 | 1.94 | 9.00 | 5.25 | 16.50 | 29.00 | 41.50 |

| Coil Rows | Size | Coil Height | Left hand | | | | Right Hand | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | B | D | F | H | B | D | F | H | N | M | P |
| 4-row | 8 | 29.63 | 10.75 | | 25.44 | | 10.75 | | 25.44 | | 1.38 | 0.63 | 9.00 |
| | 10 | 29.63 | 11.44 | | 25.06 | | 11.44 | | 25.06 | | 1.38 | 0.88 | 9.00 |
| | 12 | 32.13 | 12.63 | | 28.88 | | 12.63 | | 28.88 | | 1.38 | 0.88 | 9.00 |
| | 14 | 37.13 | 15.63 | | 34.13 | | 15.63 | | 34.13 | | 1.38 | 0.88 | 9.00 |
| | 17 | 37.13 | 15.63 | | 34.13 | | 15.63 | | 34.13 | | 1.38 | 0.88 | 9.00 |
| | 21 | 45.88 | 20.88 | | 43.31 | | 20.81 | | 43.31 | | 1.63 | 1.13 | 9.00 |
| | 25 | 52.13 | 18.75 | | 45.00 | | 19.13 | | 45.38 | | 1.63 | 0.88 | 9.00 |
| | 30 | 52.13 | 12.81 | 25.31 | 37.81 | 50.31 | 13.19 | 25.69 | 38.19 | 50.69 | 1.63 | 0.88 | 9.00 |
| 6-row | 8 | 29.63 | 10.75 | | 25.44 | | 10.88 | | 25.56 | | 1.38 | 0.88 | 9.00 |
| | 10 | 29.63 | 11.44 | | 25.06 | | 11.44 | | 25.06 | | 1.38 | 0.88 | 9.00 |
| | 12 | 32.13 | 12.63 | | 28.88 | | 12.63 | | 28.88 | | 1.38 | 0.88 | 9.00 |
| | 14 | 37.13 | 15.38 | | 33.88 | | 15.38 | | 33.88 | | 1.38 | 0.88 | 9.00 |
| | 17 | 37.13 | 15.38 | | 33.88 | | 15.38 | | 33.88 | | 1.38 | 0.88 | 9.00 |
| | 21 | 45.88 | 20.88 | | 43.38 | | 20.88 | | 43.38 | | 1.63 | 1.13 | 9.00 |
| | 25 | 52.13 | 19.13 | | 45.38 | | 19.13 | | 45.38 | | 1.63 | 1.38 | 9.00 |
| | 30 | 52.13 | 13.19 | 25.69 | 38.19 | 50.69 | 13.19 | 25.69 | 38.19 | 50.69 | 1.63 | 1.38 | 9.00 |

**Figure 80. DX intertwined coils size 8-30**

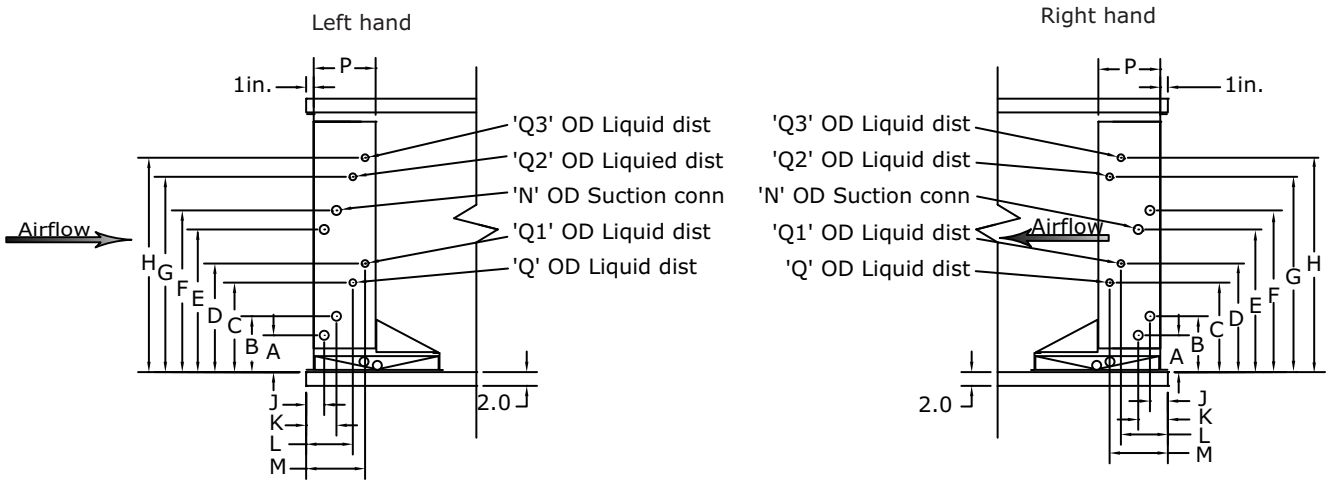


**Table 29. DX intertwined coil dimensions**

| Coil Rows | Size | Coil Height | J | K | L | M | Left Hand A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8 | 29.63 | 4.19 | 5.75 | 4.31 | 6.31 | 5.19 | 8.94 | 16.88 | 21.00 | | | | |
| | 10 | 29.63 | 4.19 | 5.75 | 4.31 | 6.31 | 5.19 | 7.69 | 25.38 | 22.88 | | | | |
| | 12 | 32.13 | 4.19 | 5.75 | 4.31 | 6.31 | 7.63 | 5.13 | 20.31 | 25.38 | | | | |
| 4-row | 14,17 | 37.13 | 4.19 | 5.75 | 4.31 | 6.31 | 5.19 | 7.69 | 25.50 | 22.88 | | | | |
| | 21 | 45.88 | 4.19 | 5.75 | 4.31 | 6.31 | 5.19 | 7.69 | 19.88 | 17.63 | 27.69 | 30.19 | 37.63 | 40.13 |
| | 25 | 52.13 | 4.19 | 5.75 | 4.31 | 6.31 | 5.19 | 7.69 | 17.75 | 20.25 | 30.19 | 27.69 | 44.00 | 46.50 |
| | 30 | 52.13 | 4.13 | 5.81 | 5.19 | 7.19 | 6.50 | 5.25 | 21.00 | 22.25 | 29.00 | 30.25 | 46.00 | 47.25 |
| | 8 | 29.63 | 2.00 | 3.56 | 2.13 | 4.13 | 5.19 | 8.94 | 21.00 | 16.88 | | | | |
| | 10 | 29.63 | 2.00 | 3.56 | 2.13 | 4.13 | 5.19 | 7.69 | 22.88 | 25.38 | | | | |
| | 12 | 32.13 | 2.00 | 3.56 | 2.13 | 4.13 | 7.63 | 5.13 | 25.38 | 20.31 | | | | |
| 6-row | 14,17 | 37.13 | 2.00 | 3.56 | 2.13 | 4.13 | 5.19 | 7.69 | 25.50 | 22.88 | | | | |
| | 21 | 45.88 | 2.00 | 3.56 | 2.13 | 4.13 | 5.19 | 7.69 | 19.88 | 17.63 | 27.63 | 30.19 | 37.63 | 40.13 |
| | 25 | 52.13 | 2.00 | 3.56 | 2.13 | 4.13 | 5.13 | 7.63 | 17.75 | 20.25 | 30.19 | 27.63 | 44.00 | 46.50 |
| | 30 | 52.13 | 1.94 | 3.63 | 5.19 | 7.19 | 6.50 | 5.25 | 21.00 | 22.25 | 29.00 | 30.25 | 46.00 | 47.25 |

| Coil Rows | Size | Coil Height | Right Hand A | B | C | D | E | F | G | H | P | N | Q | Q1 | Q2 | Q3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8 | 29.63 | 5.19 | 8.94 | 21.00 | 16.88 | | | | | 9.00 | 1.38 | 0.63 | 0.63 | | |
| | 10 | 29.63 | 5.19 | 7.69 | 22.88 | 25.38 | | | | | 9.00 | 1.38 | 0.88 | 0.88 | | |
| | 12 | 32.13 | 7.69 | 5.19 | 25.38 | 20.31 | | | | | 9.00 | 1.38 | 0.88 | 0.88 | | |
| 4-row | 14,17 | 37.13 | 5.19 | 7.69 | 25.50 | 22.88 | | | | | 9.00 | 1.38 | 0.88 | 0.88 | | |
| | 21 | 45.88 | 5.19 | 7.69 | 19.88 | 17.63 | 27.69 | 30.19 | 37.63 | 40.13 | 9.00 | 1.38 | 0.88 | 0.63 | 0.63 | 0.63 |
| | 25 | 52.13 | 5.19 | 7.69 | 17.75 | 20.25 | 30.19 | 27.69 | 44.00 | 46.50 | 9.00 | 1.38 | 0.63 | 0.88 | 0.88 | 0.88 |
| | 30 | 52.13 | 6.50 | 5.25 | 21.00 | 22.25 | 29.00 | 30.25 | 46.00 | 47.25 | 9.00 | 1.63 | 0.88 | 0.88 | 0.88 | 0.88 |
| | 8 | 29.63 | 5.19 | 8.94 | 21.00 | 16.88 | | | | | 9.00 | 1.38 | 0.88 | 0.88 | | |
| | 10 | 29.63 | 5.19 | 7.69 | 22.88 | 25.38 | | | | | 9.00 | 1.38 | 0.88 | 0.88 | | |
| | 12 | 32.13 | 7.69 | 5.19 | 25.38 | 20.31 | | | | | 9.00 | 1.38 | 0.88 | 0.88 | | |
| 6-row | 14,17 | 37.13 | 5.19 | 7.69 | 25.50 | 22.88 | | | | | 9.00 | 1.38 | 1.13 | 0.88 | | |
| | 21 | 45.88 | 5.19 | 7.69 | 19.88 | 17.63 | 27.63 | 30.13 | 37.63 | 40.13 | 9.00 | 1.38 | 0.88 | 0.88 | 0.88 | 0.88 |
| | 25 | 52.13 | 5.19 | 7.69 | 17.75 | 20.25 | 30.19 | 27.69 | 44.00 | 46.50 | 9.00 | 1.38 | 0.88 | 0.88 | 0.88 | 0.88 |
| | 30 | 52.13 | 6.44 | 5.19 | 21.00 | 22.25 | 29.00 | 30.25 | 46.00 | 47.25 | 9.00 | 1.63 | 1.38 | 1.38 | 1.38 | 1.38 |

# Mixing Box/Filter Section

**Figure 81. Unit filter rack**

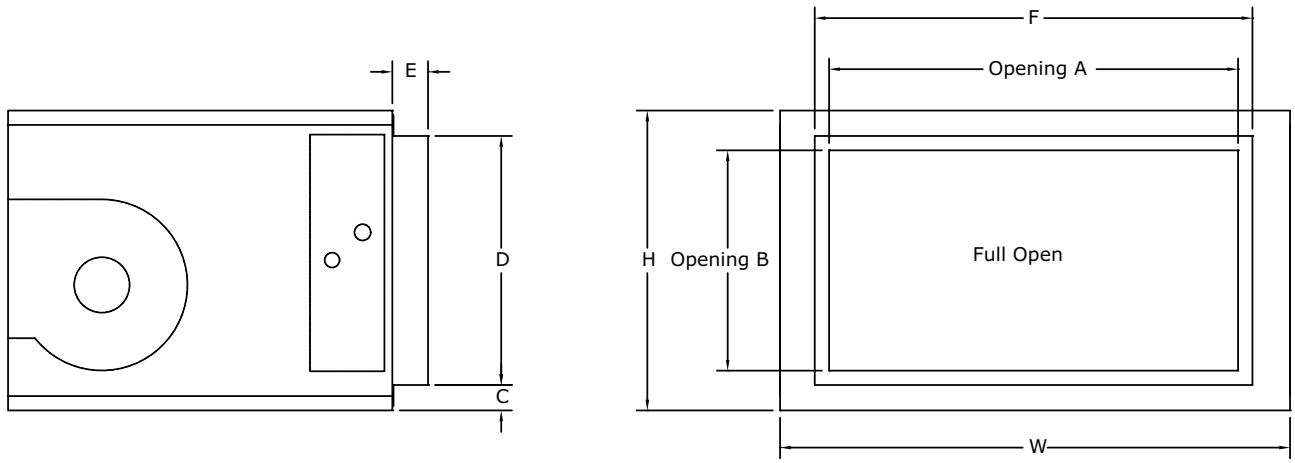



**Table 30. Unit filter dimensions (inches) and weight (pounds)**

| Size | E - 2-in. flat | E - 2-in./4-in. Combination | B | A | D | F | Weight[1] |
|---|---|---|---|---|---|---|---|
| 3 | 4.00 | 9.50 | 20.35 | 28.00 | 22.35 | 30.00 | 26 |
| 6 | 4.00 | 9.50 | 25.35 | 41.00 | 27.35 | 43.00 | 35 |
| 8 | 4.00 | 9.50 | 32.64 | 45.00 | 34.64 | 47.00 | 48 |
| 10 | 4.00 | 9.50 | 32.64 | 57.00 | 34.64 | 59.00 | 61 |
| 12 | 4.00 | 9.50 | 36.64 | 65.00 | 38.64 | 67.00 | 64 |
| 14 | 4.00 | 9.50 | 36.64 | 65.00 | 38.64 | 67.00 | 68 |
| 17 | 4.00 | 9.50 | 40.64 | 73.00 | 42.64 | 75.00 | 74 |
| 21 | 4.00 | 9.50 | 45.64 | 73.00 | 47.64 | 75.00 | 78 |
| 25 | 4.00 | 9.50 | 50.64 | 75.00 | 52.64 | 77.00 | 68 |
| 30 | 4.00 | 9.50 | 50.64 | 88.00 | 52.64 | 90.00 | 78 |

**Note:** [1]Weight includes heaviest filter.

**Figure 82. Mixing box/filter section**

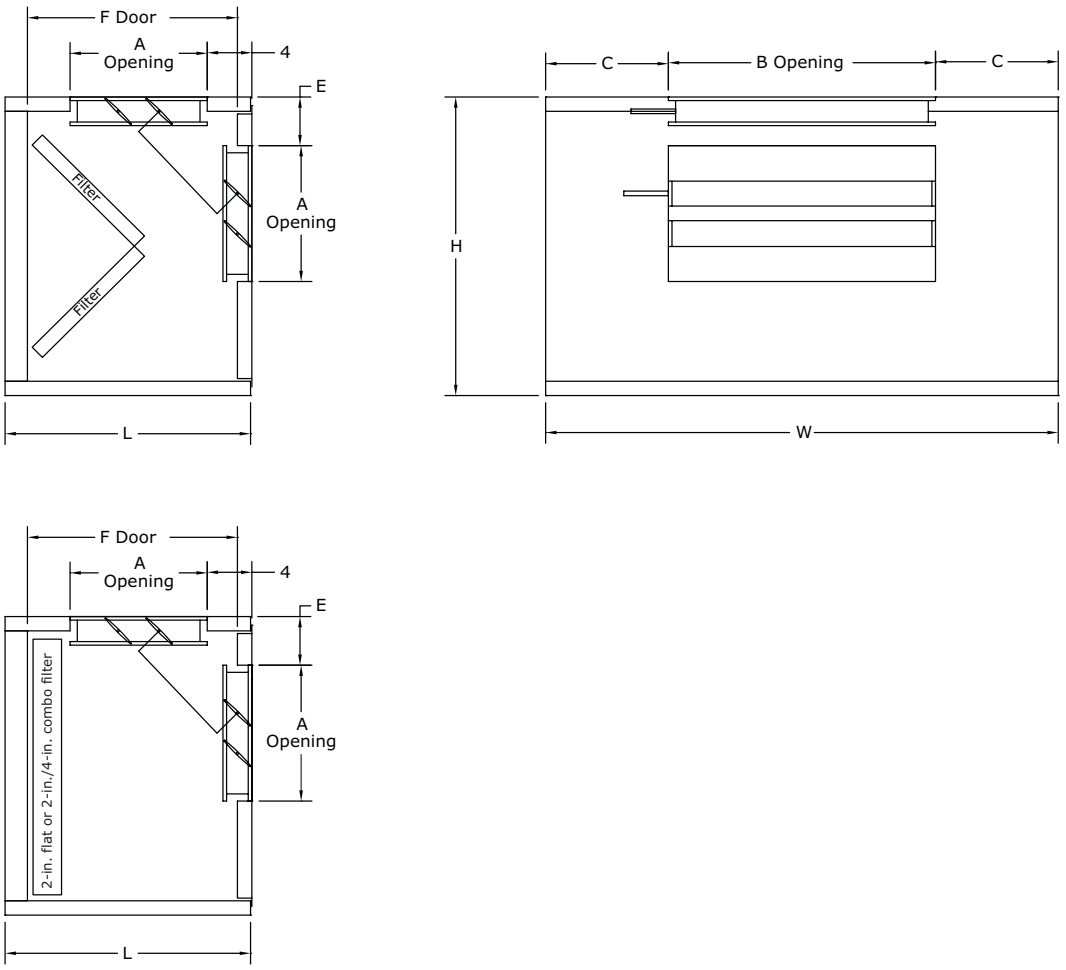



**Table 31. Mixing box section with filter weight (lbs) and dimensions (inches)**

| Size | H | W | L | A | B | C | E | F | Weight[1] |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 27.50 | 34.00 | 29.00 | 13.97 | 13.25 | 10.38 | 6.77 | 25.00 | 157 |
| 6 | 32.50 | 47.00 | 33.00 | 13.97 | 25.25 | 10.88 | 9.27 | 29.00 | 227 |
| 8 | 38.00 | 51.00 | 31.00 | 13.97 | 32.00 | 9.50 | 12.02 | 27.00 | 256 |
| 10 | 38.00 | 63.00 | 31.00 | 13.97 | 42.75 | 10.13 | 12.02 | 27.00 | 302 |
| 12 | 41.80 | 71.00 | 29.00 | 13.97 | 52.50 | 9.25 | 13.89 | 25.00 | 324 |
| 14 | 45.50 | 71.00 | 34.00 | 19.72 | 41.25 | 14.88 | 12.89 | 30.00 | 368 |
| 17 | 48.00 | 79.00 | 34.00 | 19.72 | 51.00 | 14.00 | 14.14 | 30.00 | 406 |
| 21 | 54.30 | 79.00 | 34.00 | 19.72 | 60.00 | 9.50 | 17.27 | 30.00 | 432 |
| 25 | 60.50 | 81.00 | 40.00 | 25.47 | 58.50 | 11.25 | 17.52 | 36.00 | 506 |
| 30 | 60.50 | 94.00 | 40.00 | 25.47 | 68.00 | 13.00 | 17.52 | 36.00 | 563 |

**Note:** [1]Weight includes heaviest filter.

**Figure 83. Angle filter section**

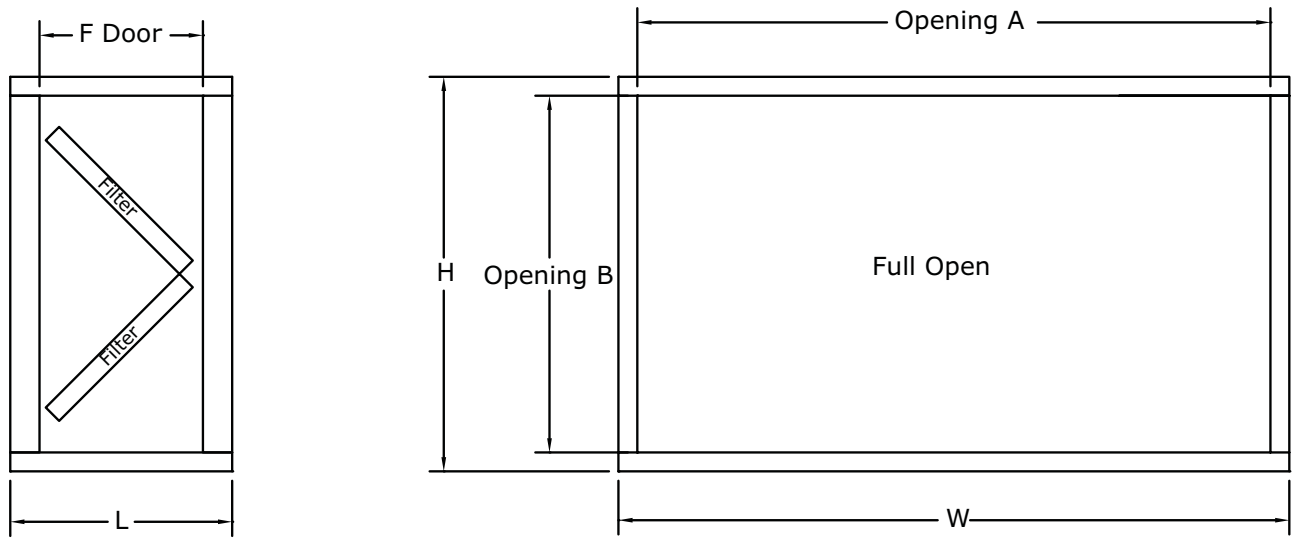



**Table 32. Angle filter section dimensions (inches) and weight (pounds)**

| Size | H | W | L | A | B | F | Weight[1] |
|---|---|---|---|---|---|---|---|
| 3 | 27.50 | 34.00 | 19.25 | 30.00 | 23.50 | 15.25 | 70 |
| 6 | 32.50 | 47.00 | 22.75 | 43.00 | 28.50 | 18.75 | 100 |
| 8 | 38.00 | 51.00 | 20.50 | 47.00 | 34.00 | 16.50 | 103 |
| 10 | 38.00 | 63.00 | 20.50 | 59.00 | 34.00 | 16.50 | 117 |
| 12 | 41.80 | 71.00 | 18.75 | 67.00 | 37.75 | 14.75 | 123 |
| 14 | 45.50 | 71.00 | 17.50 | 67.00 | 41.50 | 13.50 | 128 |
| 17 | 48.00 | 79.00 | 22.00 | 75.00 | 44.00 | 18.00 | 161 |
| 21 | 54.30 | 79.00 | 18.75 | 75.00 | 50.25 | 14.75 | 154 |
| 25 | 60.50 | 81.00 | 22.00 | 77.00 | 56.50 | 18.00 | 177 |
| 30 | 60.50 | 94.00 | 22.00 | 90.00 | 56.50 | 18.00 | 208 |

**Note:** [1]Weight includes heaviest filter.

## Filter Placement

**Figure 84. Flat filter arrangement**

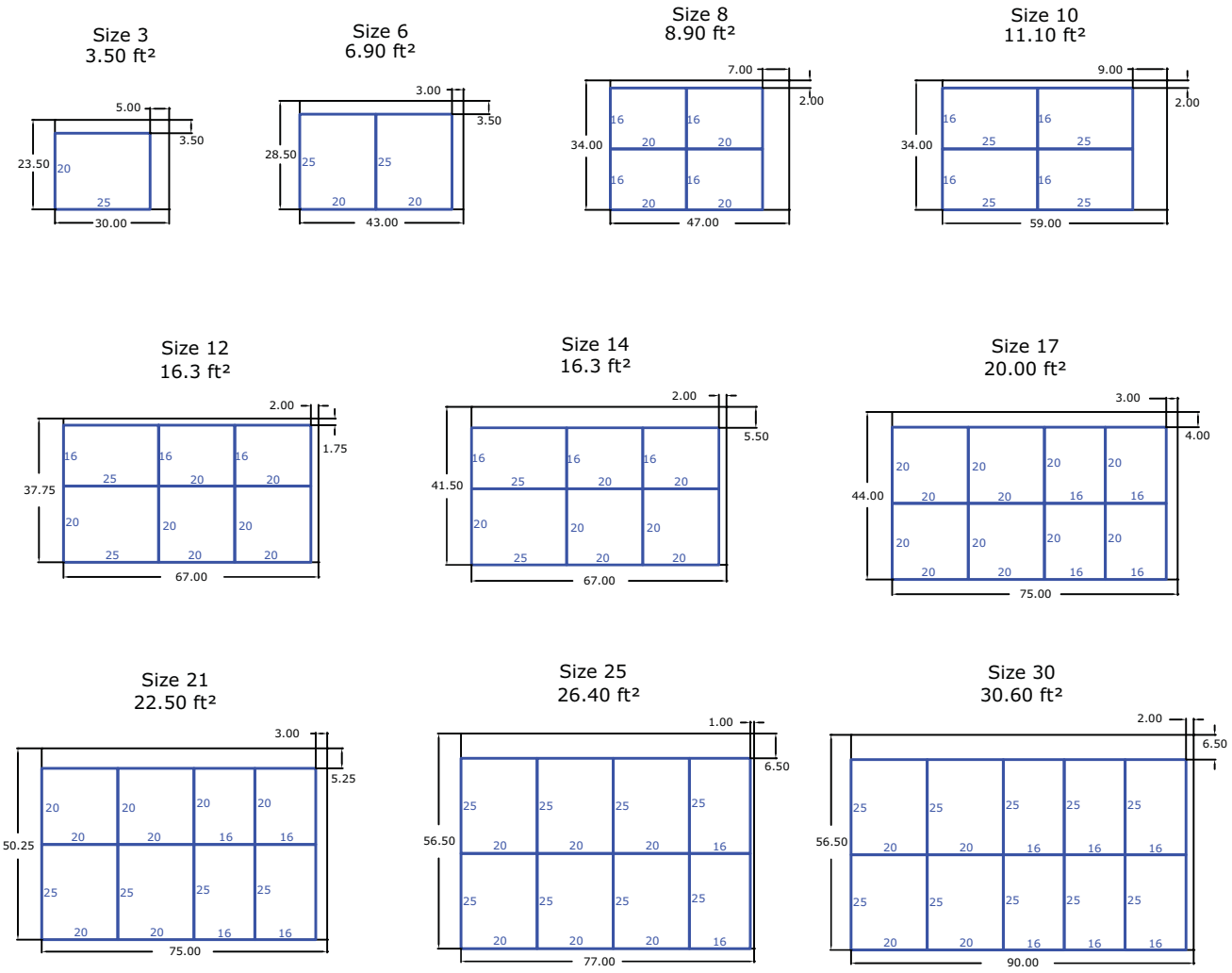
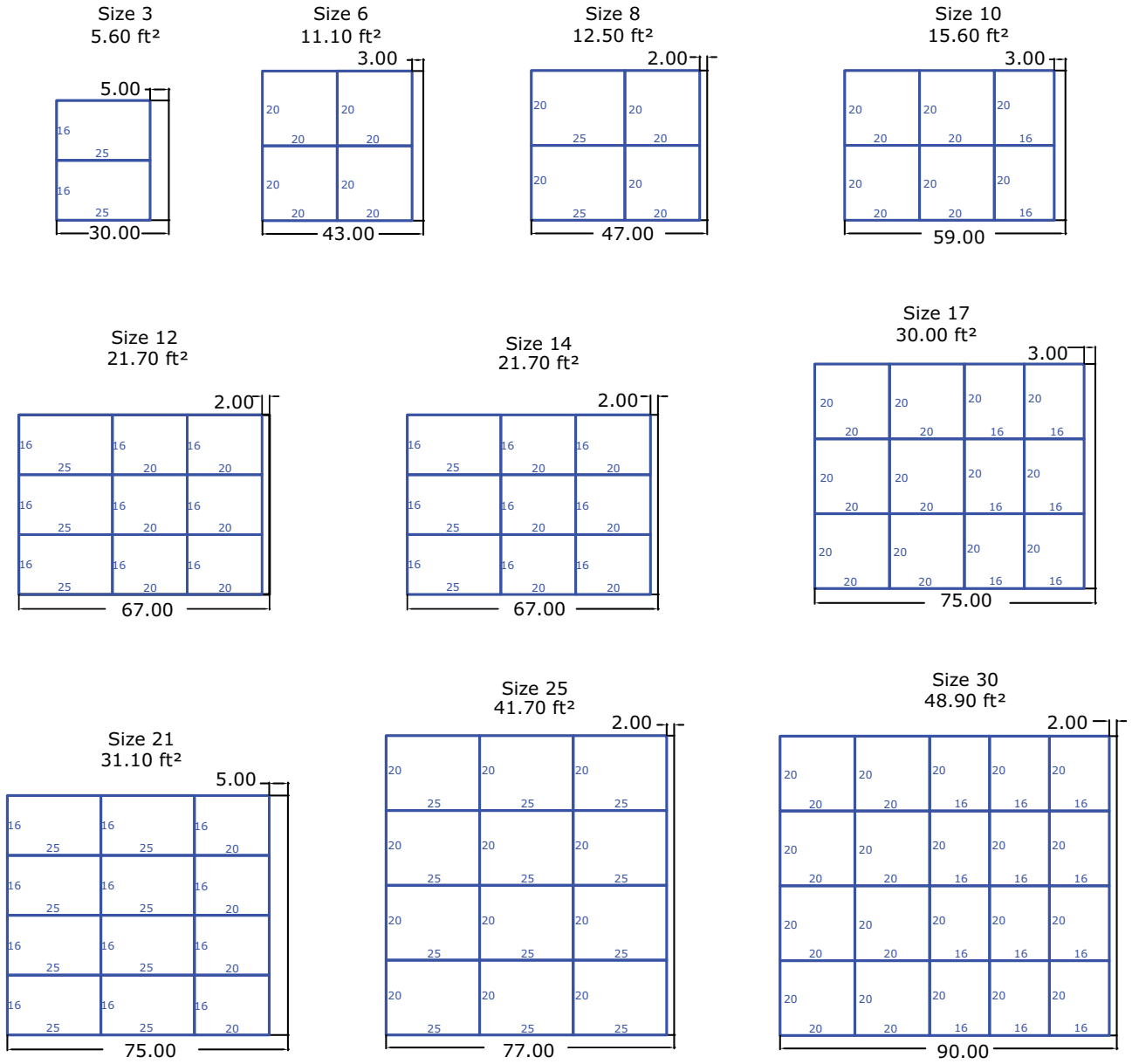


**Figure 85. Angle filter arrangement**



# Fans

**Table 33. Fan weights (pounds) - no motor**

| Unit Size | FC Fan | DDP Fan |
|---|---|---|
| 3 | 30.71 | 60.63 |
| 6 | 47.09 | 96.03 |
| 8 | 69.21 | 110.09 |
| 10 | 83.02 | 149.12 |
| 12 | 97.90 | 158.25 |
| 14 | 110.46 | 164.44 |
| 17 | 133.09 | 172.89 |
| 21 | 155.81 | 290.14 |
| 25 | 168.83 | 304.07 |
| 30 | 208.34 | 317.00 |

**Note:** Add motor weight to get total weight of fan.

# Motors

**Table 34. Motor weights (pounds)**

| Motor HP | Voltage | Motor Weight | Frame Size |
|---|---|---|---|
| 1 | 208, 230/460, 575 | 38 | 143 |
| 1.5 | 208, 230/460, 575 | 37 | 145 |
| 2 | 208, 230/460, 575 | 43 | 145 |
| 3 | 208, 230/460, 575 | 71 | 182 |
| 5 | 208, 230/460, 575 | 82 | 184 |
| 7.5 | 208, 230/460, 575 | 91 | 213 |
| 10 | 208, 230/460, 575 | 127 | 215 |
| 15 | 208, 230/460, 575 | 217 | 254 |

**Table 35. VFD Weights (pounds) and Line Input**

| | | | | VFD (single Fan) | | VFD (dual Fan) | |
|---|---|---|---|---|---|---|---|
| HP | Type | FLA | RPM | Line Input | Weight | Line Input | Weight |
| 1 | 208 V / 60 Hz / 3 PH | 3.50 | 1800 | 4.20 | 10 | | |
| | 230 V / 60 Hz / 3 PH | 3.00 | 1800 | 4.20 | 10 | | |
| | 460 V / 60 Hz / 3 PH | 1.50 | 1800 | 2.10 | 10 | | |
| | 575 V / 60 Hz / 3 PH | 1.20 | 1800 | 3.90 | 20 | | |
| 1.5 | 208 V / 60 Hz / 3 PH | 5.10 | 1800 | 6.80 | 10 | | |
| | 230 V / 60 Hz / 3 PH | 4.40 | 1800 | 6.80 | 10 | | |
| | 460 V / 60 Hz / 3 PH | 2.20 | 1800 | 3.40 | 10 | | |
| | 575 V / 60 Hz / 3 PH | 1.80 | 1800 | 3.90 | 20 | | |
| 2 | 208 V / 60 Hz / 3 PH | 6.50 | 1800 | 6.80 | 10 | | |
| | 230 V / 60 Hz / 3 PH | 5.80 | 1800 | 6.80 | 10 | | |
| | 460 V / 60 Hz / 3 PH | 2.90 | 1800 | 3.40 | 10 | | |
| | 575 V / 60 Hz / 3 PH | 2.40 | 1800 | 3.90 | 20 | | |
| 3 | 208 V / 60 Hz / 3 PH | 9.70 | 1800 | 15.20 | 15 | 22.00 | 27 |
| | 230 V / 60 Hz / 3 PH | 8.60 | 1800 | 15.20 | 15 | 22.00 | 27 |
| | 460 V / 60 Hz / 3 PH | 4.20 | 1800 | 4.80 | 12 | 11.00 | 20 |
| | 575 V / 60 Hz / 3 PH | 3.30 | 1800 | 3.90 | 20 | 9.00 | 25 |
| 5 | 208 V / 60 Hz / 3 PH | 15.70 | 1800 | 22.00 | 22 | 42.00 | 31 |
| | 230 V / 60 Hz / 3 PH | 13.60 | 1800 | 22.00 | 22 | 42.00 | 31 |
| | 460 V / 60 Hz / 3 PH | 6.70 | 1800 | 8.20 | 12 | 14.00 | 20 |
| | 575 V / 60 Hz / 3 PH | 5.30 | 1800 | 6.10 | 20 | 11.00 | 25 |
| 7.5 | 208 V / 60 Hz / 3 PH | 22.40 | 1800 | 28.00 | 22 | 59.40 | 64 |
| | 230 V / 60 Hz / 3 PH | 19.40 | 1800 | 28.00 | 22 | 59.40 | 64 |
| | 460 V / 60 Hz / 3 PH | 9.40 | 1800 | 11.00 | 15 | 21.00 | 27 |
| | 575 V / 60 Hz / 3 PH | 7.60 | 1800 | 9.00 | 20 | 18.00 | 37 |
| 10 | 208 V / 60 Hz / 3 PH | 29.50 | 1800 | 42.00 | 26 | 59.40 | 64 |
| | 230 V / 60 Hz / 3 PH | 25.20 | 1800 | 42.00 | 26 | 59.40 | 64 |
| | 460 V / 60 Hz / 3 PH | 12.50 | 1800 | 14.00 | 15 | 27.00 | 27 |
| | 575 V / 60 Hz / 3 PH | 10.00 | 1800 | 11.00 | 20 | 22.00 | 37 |
| 15 | 208 V / 60 Hz / 3 PH | 43.40 | 1800 | 59.40 | 59 | | |
| | 230 V / 60 Hz / 3 PH | 37.80 | 1800 | 59.40 | 59 | | |
| | 460 V / 60 Hz / 3 PH | 18.50 | 1800 | 21.00 | 22 | 40.00 | 31 |
| | 575 V / 60 Hz / 3 PH | 14.80 | 1800 | 18.00 | 20 | 34.00 | 64 |

# Mechanical Specifications

## General

Performance Climate Changer air handlers must be rigged, lifted, and installed in strict accordance with the CLCH-SVX009A-EN Installation, Operation, and Maintenance manual for UCCA air handlers. The units are also to be installed in strict accordance with the specifications.

Per ASHRAE 62.1 recommendation, units will be shipped wrapped or shipped inside an enclosed truck to protect unit from in-transit rain and debris. Installing contractor is responsible for long-term storage in accordance with CLCH-SVX009A-EN Installation, Operation and Maintenance manual.

### UL and C-UL Listed

Air-handling performance data shall be certified in accordance with AHRI Standard 430. Coil performance shall be certified in accordance with AHRI Standard 410.

## Unit Construction

### Casing Construction

All unit panels shall be 2-inch solid, double-wall construction to facilitate cleaning of unit interior. All exterior and interior AHU panels will be made of galvanized steel. Motor and drive locations can be on the same side as the unit coil connections or on the opposite side. The casing shall be able to withstand up to 4 inches w.g. positive or negative static pressure. The unit panels shall not exceed 0.005 inch deflection per inch of panel span at 4 inches w.g. positive or negative static pressure.

### Unit Flooring

The unit floor shall be of sufficient strength to support a 300-lb. load during maintenance activities and shall deflect no more than 0.005 inch per inch of panel span when sitting on a support structure.

### Insulation

Panel insulation shall provide a minimum thermal resistance (R-value) of 13 $ft^2*h*F/Btu$ throughout the entire unit, except for narrow jambs. Insulation shall completely fill the panel cavities in all directions so that no voids exist and settling of insulation is prevented. Panel assembly shall comply with NFPA 90A.

## Drain Pans

All units shall be provided with an insulated assembly of polymer material or stainless steel. To address indoor air quality (IAQ), the drain pan shall be designed in accordance with ASHRAE 62.1 being of sufficient size to collect all condensation produced from the coil and sloped in two planes promoting positive drainage to eliminate stagnant water conditions. The outlet shall be located at the lowest point of the pan and shall be sufficient diameter to preclude drain pan overflow under any normally expected operating condition. All drain pan threaded connections shall be visible external to the unit.

## Access Doors

Access doors shall be 2-inch double-wall construction. Interior and exterior door panels shall be of the same construction as the interior and exterior wall panels, respectively. Surface-mounted handles shall be provided to allow quick access to the interior of the unit. Handle hardware shall be designed to prevent unintended closure. Access doors shall be hinged and removable for quick, easy access. Door handle hardware shall be adjustable and visually indicate locking position of door latch external to the section.

# Fans

## FC Fan

The fan shall be a double-width, double-inlet, multi-blade-type, forward-curved (FC) fan. The fan shall be equipped with permanently lubricated, anti-friction bearings with an L-50 life of 200,000 hours as calculated per ANSI/AFBMA Standard 9. All fan wheels are dynamically balanced by the fan vendor or unit manufacturer.

## Direct-Drive Plenum Fan

The fan shall be a single-width, single-inlet, 10-bladed plenum fan. The fan shall consist of a backward-curved, welded steel wheel. Plenum fan shall be direct-driven.

Units containing multiple fans shall be controlled using a common control signal, such as the duct static control signal, to modulate the fan speed.

# Fan Isolation

All fans, including direct-drive plenum fans, shall be internally isolated to inhibit noise and vibration through the ductwork and building structure. A flexible connection shall be installed between fan and unit casing to ensure complete isolation. Flexible connection shall comply with NFPA 90A and UL 181 requirements. If fans and motors are not internally isolated, then the entire unit shall be externally isolated from the building, including supply and return duct work, piping, and electrical connections. External isolation shall be furnished by the installing contractor in order to avoid transmission of noise and vibration through the ductwork and building structure.

# Fan Drives

Drives are available either fixed or variable pitch, with V-belt sheaves.

An optional factory mounted and wired variable frequency drive (VFD) is available for fan speed modulation in a VAV application.

# Fan Motors

Motors are open drip-proof (ODP) with permanently sealed ball bearings. Motor options include:

- 208 volt, 3-phase, 60 Hz
- 230 volt, 3-phase, 60 Hz
- 460 volt, 3-phase, 60 Hz
- 575 volt, 3-phase, 60 Hz

The motor shall meet or exceed all NEMA Standards Publication MG1 requirements and comply with NEMA premium efficiency levels when applicable. For VAV applications, an optional maintenance free, circumferential conductive micro fiber shaft grounding ring installed on the fan motor to discharge shaft currents to ground is available.

# Coils

## Hydronic Coils

Hydronic coils have ½-inch OD x 0.016 inch W round seamless copper tubes mechanically bonded to coil fins. Coil fins are aluminum with full fin collars that provide maximum fin-tube contact and accurate spacing. Coils are available with 9, 12, and 14 fins per inch. Manufacturer shall not allow selections where moisture carryover could occur at design conditions. For hydronic coils used in a two-pipe system, the unit manufacturer shall provide performance data in both the cooling and heating mode.

Hydronic coils used as heating only will be available in one-row or two-row configurations. Hydronic coils used as cooling only will be available in four-row, six-row, or eight-row configurations. Multi-row hydronic coils have continuous tube circuits arranged for counterflow (water flow counter to the direction of unit airflow). The coil casing may be galvanized or stainless steel. Coils have round seamless copper pipe headers with NPT external thread steel pipe connections. Coils have one vent and one drain connection consisting of 3/8-inch NPT internal thread copper adapter with steel square head pipe plug. Supply and return connections are located outside the unit casing (on the same side of the unit) and are clearly labeled to facilitate field piping. Coils are proof-tested to 450 psig and leak-tested under water to 300 psig. Maximum standard operating conditions are 300 psig and 200°F. Coil performance data and coils containing water or ethylene glycol shall be certified in accordance with AHRI Standard 410. Propylene glycol and calcium chloride, or mixtures thereof, are outside the scope of AHRI Standard 410 and, therefore, do not require AHRI 410 rating or certification.

## Refrigerant Cooling Coils

Direct expansion (DX) coils use refrigerant R-410A and have ½-inch OD x 0.016-inch W round seamless copper tubes expanded into full fin collars for permanent fin-tube bond. Coil fins are continuous with full fin collars that provide maximum fin-tube contact and accurate spacing. Coils are available with 9, 12, and 14 fins per inch, in four-row and six-row configurations. Manufacturer shall not allow selections where moisture carryover could occur at design conditions.

The coil casing may be galvanized or stainless steel. Coils have round, seamless, copper pipe liquid lines and suction headers with male sweat connections. Suction headers have bottom connections to aid drainage of any oil that may collect in the coil. Liquid line and suction connections are outside the unit casing (on the same side of the unit) to facilitate field piping. Connections are clearly labeled to ensure coils are piped correctly. Coils have venture type distributor assemblies designed with a vertical downflow feed for low pressure drops.

Four-row coils have 3/16-inch distributor(s) and OD x 0.016-inch W round seamless copper tube. Six-row coils have ¼-inch distributor(s) and OD x 0.025-inch W round seamless copper tubes.

Each refrigeration circuit has one distributor. Coil circuiting options are:

- Single refrigeration circuit for unit sizes 3 through 10
- Horizontal face split circuiting (two distributors) for unit sizes 8 through 25
- Horizontal face split circuiting (four distributors) for unit size 30
- Intertwined circuiting (two distributors) for unit sizes 8 through 14
- Intertwined circuiting (four distributors) for unit sizes 17 through 30

Coils are proof-tested to 450 psig and leak tested to 300 psig air pressure under water. After testing, the inside of the coils shall be dried, all connections shall be sealed, and the coils shall be shipped with a charge of dry nitrogen. Maximum standard operating conditions at 127°F are 300 psig with R-22 and 480 psig with R-410A. Coil performance data shall be certified in accordance with AHRI Standard 410.

### Steam Heating Coils

A one-row steam distributing coil is available in the pre-heat or reheat position. Steam coils are non-freezing and are pitched to ensure adequate condensate drainage. Coils have one-inch OD x 0.031-inch W round seamless copper condensing tubes expanded into full fin collars for permanent fin-tube bond. Coil headers are cast iron for permanent leak tight joints. Coils have continuous Sigma-Flo® aluminum fins with full fin collars for maximum fin-tube contact and accurate spacing at six fins per inch. The coil casing is heavy-duty galvanized steel. Coil header are gray cast iron with NPT internal thread connections. Supply, return, and vacuum breaker connections are located at the same end of the unit and clearly labeled to ensure coils are piped correctly. Distributor tubes are 11/16-inch OD copper. Also, they have die-formed, accurately spaced directional kinetic orifices that discharge steam in the direction of condensate flow (toward the return connection) to ensure even steam distribution across the coil face area and push out condensate. Distributor tubes are located concentrically within condensing tubes using corrosion resistant support clips. Supply header steam deflectors prevent impingement of steam into tubes in supply connection area. Coils are proof-tested to 300 psig and leak-tested to 200 psig air pressure under water. Maximum standard operating conditions are 100 psig at 400°F. Coil performance data shall be certified in accordance with AHRI Standard 410.

## Electric Heat

A UL-recognized electric heater shall be factory-installed in the air handler. The electric heat is an open-wire resistance heater and installed in the reheat position. The heater has primary and secondary protection circuits. The contactors for energizing the electric heater shall be magnetic contactors. Electric heaters above 48 amps shall be fused into circuits not to exceed 48 amps as required by UL and NEC.

### Control Options

- Step controller (0-10VDC)
  - The electric heater shall be factory-wired to an electronic step controller relay bank. This type of control may be connected to a 0-10VDC signal from a standalone thermostat or building automation system, which is converted to stages of heat. The heater shall be available with up to four electric heat stages.
- SSR-full modulating control (0-10VDC)
  - The electric heater shall be factory-wired to accommodate SSR-full modulating control. The SSR control can receive a 0-10VDC signal from a standalone thermostat or building automation system providing full modulating control of the heater.

## Filters

All filters are standard sizes. The unit is available with:

- Two-inch, MERV 8 or MERV 13 flat or angled filters
- Two-inch, MERV 8/Four-inch MERV 11 combination filter
- Two-inch, MERV 8/Four-inch MERV 13 combination filter
- Two-inch, MERV 13/Four-inch MERV 13 combination filter

An optional mixing box section is available with:

- Two-inch, MERV 8 or MERV 13 flat filters
- Two-inch, MERV 8 or MERV 13 angled filters
- Two-inch, MERV 8/Four-inch MERV 11 combination filter
- Two-inch, MERV 8/Four-inch MERV 13 combination filter
- Two-inch, MERV 13/Four-inch MERV 13 combination filter.

# Mixing Box

The mixing box has two ultra-low-leak, parallel blade dampers with edge and jamb seals. Dampers are tested and certified in accordance with AMCA 511 for air performance and air leakage. Leakage rate shall not exceed 3 cfm/$ft^2$ at one-inch w.g. and 8 cfm/$ft^2$ at four-inch w.g. Dampers are double-skin airfoil design or equivalent. Damper blades and frames are galvanized steel. On unit sizes 3 to 8, the damper has a ½-inch drive for use with an optional factory-mounted actuator. On unit sizes 10 to 30, there is a one inch shaft. Optional filters are available that include two-inch, MERV 8 or 13 flat or angled, or two-inch/four-inch combination filters including MERV 8, MERV 11 or MERV 13. The mixing box has an access door on the drive side.

# Control Interface

An optional control interface is available that includes a fan motor disconnect switch, fused transformer(s), fan contactor, and customer terminal strip for field-provided controls.

Also, various end device options are available with the control interface. Binary end device options are:

- Low limit protection
- Condensate overflow switch
- Fan status switch
- Filter status switch

Analog end device options are:

- Discharge air sensor
- Mixed air sensor
- Damper actuator

# Notes

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